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CULTIVATION OF POTATOES.

JOHN HAXTON, in his Prize Essay on Light-land Farming, in the *Journal of the Royal Ag. Society*, recommends the following method of cultivating potatoes on dry sandy soils:

"The land is plowed and half dunged in winter cross-plowed and worked fine early in spring, then laid off into five and a half or six yard stetches by single furrow lines. Along these lines a half manuring, say six tons of manure, are deposited in small heaps. The land is then plowed, and the dung and potato sets placed in every third furrow. Three plows work after each other; four women, having each an equal length of land, place the sets, and an equal number, similarly placed, carry the manure from the heaps and spread it above. The next bout of the plows cover all up; and so the work proceeds with great regularity and expedition. About a week before the plants are expected to come to the surface, the land is well harrowed, which loosens and kills all surface weeds. The subsequent working consists in horse-hoeing, hand-hoeing, and earthing-up."

In our climate, plowing and dunging in the winter is out of the question. The same object, however, may be attained by plowing under a dressing of manure in the fall. The land could be "cross-plowed and worked fine early in the spring" equally well—and this is the best point in the process. The complete decomposition of the manure, and its thorough intermixture with the soil, can not be too highly recommended for potato-culture. The advantage of covering the sets with manure in this dry, hot climate, is somewhat doubtful. Coarse, unfermented dung would do more harm than good on sandy land in a dry season. Good compost, on the other hand, might help to keep the soil moist, beside furnishing the plants with appropriate food in a proper condition for direct assimilation. If, then, manure must be used, let it be well composted, or at least thoroughly decomposed.

But it seems to be the opinion of most cultivators, that manure applied directly to potatoes increases their liability to disease; while it is certain that unless the land is in good condition, a meagre yield only will be obtained. It should be the object of the potato grower, therefore, to make the land rich at least a year previous to planting.

To do this, we must first ascertain what manurial substances are most required by the potato. Those chemists who think the composition of the ash of a plant a correct indication of its manurial requirements, tell us that, as half the ash of potatoes is potash, manures containing much potash, such as unleached ashes, should be used. We know, however, from the most conclusive experiments, that this deduction from chemical analysis is erroneous, as applied to wheat and turnips; and therefore we can have no confidence in it when applied to potatoes or any other plant. In fact, so far as we can judge from the experiments recorded, and from the general opinion of experienced farmers, manures rich in ammonia, rather than those abounding in potash, have the greatest effect in increasing the growth of potatoes. Rich ammoniacal hog-manure, Peruvian guano, &c., every one knows, have a great effect on potatoes. There can be no doubt that their action is mainly due to the ammonia they contain; for while the former contains a large quantity of potash and all other constituents of plants in addition to ammonia, the latter contains comparatively nothing else but ammonia and phosphate of lime. But phosphate of lime does little good on potatoes, and therefore the effect of guano must be attributed to the ammonia it supplies to the potato plant.

If, then, a large crop of potatoes is required, the soil must be made rich in ammonia; and fortunately there is no natural way of doing this without supplying to the soil all those inorganic elements which are indispensable to the growth of all plants.

Potatoes and wheat are the same in their leading manurial requirements. The previous crops, and treatment of the soil best adapted for the production of wheat, are also best adapted for the production of a large crop of potatoes, with this important difference: For wheat, the soil must be compact; for potatoes, as loose as possible: for wheat, putrescent manures are in many cases desirable; for potatoes, they are objectionable, as tending to increase the potato disease.

Of all plants cultivated in this country, none are so good to precede wheat as red clover. None *enriches the soil so much* for potatoes. But a tough clover sod, turned over immediately before planting, prevents, to a greater or less degree, that thorough after-working of the soil, with the horse and hand-hoe, which is essential to the production of a good crop of potatoes. To get the enriching advantages of the clover sod without this drawback, should be the aim of the potato-grower. How can this be best accomplished? Will some of our experienced farmers answer the question.

As will be seen from the above extract, the English plant potatoes in rows about two and a half feet apart, and one foot between the sets. A larger crop

unquestionably, can be obtained by so doing than by planting in hills, as is most commonly done in this country; but more labor is required to plant them, keep clean, dig, &c. An intelligent farmer, near this city, who has cultivated potatoes in rows for many years, and who is well satisfied that a much larger crop is obtained, abandoned the practice from the belief that the extra yield will not pay for the extra labor. Will not some of our correspondents give us their experience on this point?

Potatoes should be planted as early as the ground can be got into good condition. In the experiments of Mr. H. H. Eastman, of Marshall, Oneida county, N. Y., one plot, planted the 18th of May, gave 142 bushels per acre; another, planted the 23d of May, gave 131 bushels; and another, under similar condition, planted the 8th of June, gave only 100 bushels per acre. This was in 1852. The next year, similar experiments were made, with the following result: Those planted May 9th, gave 104 bushels; May 30th, 70 bushels; and June 18th, only 45 bushels per acre.

Harrowing the ground a few days before the plants are expected to break through, is practiced by many of the best farmers in this vicinity, with great advantage. It breaks the crust of the soil, and kills or checks the weeds, and thus greatly lessens the labor of hoeing. In harrowing, be careful not to turn too short, or some of the potato plants will be pulled up. With ordinary care, little damage need be anticipated. If a few plants are pulled up, the loss is nothing as compared with the advantages of killing the weeds, loosening the soil, &c.

CULTIVATION OF THE WHITE BEAN.

Mr. Lawes has made a series of experiments on beans, the results of which have not as yet been published; we may say, however, that he finds, on a soil similar to that on which his wheat experiments were made, that beans are not materially benefited by an application of ammonia,—a manure which has an astonishing effect on the wheat crop. On the other hand, potash, which had no effect on the wheat, or indeed on any other crop he experimented on, proved beneficial on the beans. This is not the result of a single experiment, but of an extensive series carried on for several years.

We conclude from these experiments that wheat requires for the production of a good crop much more ammonia than the atmosphere, rain and dews supply; while beans, if supplied with the proper mineral substances, and a soil in the proper mechanical condition, can obtain from these natural sources nearly all the ammonia an average crop requires.

The same is true of peas.

It will appear strange that these crops, which contain *more than three times as much nitrogen as a crop of wheat*, should require much less ammonia (nitrogen) for their growth than wheat. Such, however, is the fact, and a more important one to the practical farmer is not to be found in the whole range of agricultural chemistry.

Another fact, brought out by Mr. Lawes' experiments on feeding animals, is important in this connection: while about one-half the food consumed by animals is passed off into the atmosphere by respiration, &c., and is lost to the farm, nearly all the nitrogen (ammonia) is found in the excrements—the loss being principally carbonaceous matter, such as starch, sugar, oil, gum, &c.

It follows, then, that by growing beans, peas, &c. and consuming them by animals, and returning the manure to the land, the soil is made much richer in ammonia, the substance so much needed by wheat, corn, oats, barley, and the grasses.

The same is true of clover, vetches, and turnips, and probably of lupins and all leguminous plants.

Does it not then appear strange, that, considering the comparatively high price of beans, and the excellent opportunity they afford for cleaning the land, this crop is not more extensively and generally cultivated?

The English "horse-bean" thrives best on clayey soil, but the white bean commonly cultivated in this country prefers a rather sandy loam, and will yield a fair crop on sandy soils so poor as to produce scarcely any other crop. Although this is the case, beans by no means object to a better "pasture," and its cultivation is most profitable on soils of good quality, and in rotation with wheat and other cereals.

Relative to the culture and produce of this crop, the late Judge Buel says:

"Beans may be cultivated in drills or in hills. They are a valuable crop, and with good care are as profitable as a wheat crop. They leave the soil in good tilth. I cultivated beans the last year in three different ways, viz: in hills, in drills, and sowed broadcast. I need not describe the first, which is a well known process. I had an acre in drills, which was the best crop I ever saw. My management was this: On the acre of light ground, where the clover had been frozen out the preceding winter, I spread eight loads of long manure, and immediately plowed and harrowed the ground. Drills or furrows were then made with a light plow, at the distance of two and a half feet, and the beans thrown along the furrows about the 25th of May, by the hand, at the rate of at least a bushel on the acre. I then gauged a double mold-board plow, which was passed once between the rows, and was followed by a light, one-horse roller, which flattened the ridges. The crop was twice cleaned of weeds by the hoe, but not earthed. The produce was more than forty-eight bushels by actual measurement."

Beans should always be cultivated in drills or in hills, in order to admit the free use of the horse and hand hoe. In Albany and Rensselaer counties, the bean is extensively cultivated. An old clover sod is turned under as soon in the spring as the ground is in good condition, and the surface afterwards well worked with a cultivator, harrow, &c. About the middle of May, plant in rows two and a half feet apart, and two feet apart in the rows, leaving about six plants in each hill. The best crop we ever saw was on a field of fifteen acres near Albany. Soil a sandy loam; corn the previous year. The beans were drilled in rows two and a half feet apart and ten inches apart in the drills. A horse cultivator was passed twice between the rows, set a little wide the second time so as to go nearer the plants. They were hand-hoed twice, hilling up slightly the last time. A shovel-plow passed between the rows after the first hand-hoeing and the second horse-hoeing, would lessen the labor of the last hand-hoeing, and prove otherwise advantageous.

In his Prize Essay on Practical Husbandry, in the last volume of the *Transactions of the New York State Agricultural Society*, W. C. Watson, of Essex county, N. Y., says:

"Beans, as a field crop, have never received the consideration, in this country, due to their value for cultivation, or importance as an article of human sustenance. They are rarely cultivated as a separate crop, but are usually grown in connection with corn. Many intelligent farmers, however, object to this practice, alleging that the beans detract from the product of corn, and that the value of the former crop does not compensate for the deterioration of the latter.

"When beans are planted by hand, the operation is proverbially slow and laborious. This objection, which has been a decided and serious one, to the extensive cultivation of this crop, is now obviated, by the introduction of the planter. A man and horse, with this implement, may plant several acres in a single day, depositing and covering the seed with great accuracy, either in hills or drills. The planter should be so gauged as to cover the seed at least two inches in depth.

"Warm and light soils are the most favorable to the culture of beans. They do not flourish on very moist or tenacious earths. If the soil is too rich, they incline to a luxuriant, but barren growth of vines. With the aid of plaster, light sands, particularly on an inverted turf, often produce a good harvest of the small white bean. The rows should be placed at a distance of about two feet, so that the cultivator may conveniently operate between them. The hills stand from fifteen to eighteen inches apart. When planted in drills, the seed should be dropped about two inches asunder. [This is thicker seeding than we have ever seen practiced.] The common corn planter may be graduated to plant beans in either method, and at any distance. Five plants are sufficient for a hill, although it is advisable to deposit more seed, in order to provide for the ravages of worms and bugs.

"The worm and grub are formidable enemies to the bean, and it is difficult to guard against their attacks. Fall plowing, and an application of salt or lime to the soil before planting, and a top dressing to the young plant of charcoal dust, ashes and plaster, are all recommended as partial remedies. Late planting I regard as the best security against them. In hoeing, when their ravages appear, they should be carefully sought out and destroyed. Land of medium fertility affords the best and safest soil for the bean culture. They require industrious and careful tillage, and should be kept free from weeds, with the earth loose and fresh about them. Beans are sometimes sown broadcast, and plowed in, with favorable results. About two bushels of seed to the acre are required in this culture, which is attended, after planting, with no additional labor or expense, except the harvesting and storing the crop."

Early frosts often injure or destroy the crop if planted too early. A farmer from Orleans county, where probably more beans are grown than in any other county in Western New York, informs us that he sometimes plants as late as the first week in June, with good results. He thinks the crop for the last ten years has been nearly or quite as profitable as wheat, and since the prevalence of the wheat midge, much more so.

"But," says a wheat-grower at our elbow, "if those farmers who have suffered so much from the wheat midge should sow less wheat and more beans, will not the supply exceed the demand, and the price fall so low that their cultivation will be unprofitable?" The price may fall; but if it should, beans will pay to cultivate for feeding to sheep on any wheat farm in Western New York, so long as good mutton is in demand.

Some will object to this statement, but it must be recollected that the production of beans impoverishes the soil but little, and that the manure made from them is worth nearly *three times as much as* that from Indian corn.

IMPROVING PEATY SOILS.

The best means of improving the texture of peaty soils is claying, but unfortunately clay-marl is seldom found in proximity to peaty soils. The next best material is sharp sand or gravel, (the latter is used with much success in New England,) which, when laid on the surface of grass, has the effect of causing the white clover to spring up with renewed vigor. As sand sinks very rapidly into peaty soils, it should never be plowed in, but merely harrowed and kept as near the surface as possible. The land should therefore be plowed very shallow for many years after an application of sand, in order to keep it as long as possible near the surface.

It has been supposed that barn-yard manure produces a weak straw on these soils, but Haxton, in his Prize Essay on Light Land Farming in the *Journal* of the Royal Agricultural Society, details an experiment which seems to discountenance this idea. He says:

"The writer has found, by a rather long and extensive experience, that grain crops even on rich peaty soils are generally increased in quantity and quality by an application of farm-yard manure. The opinion that this sort of treatment would render the straw soft and liable to fall is very prevalent, but so far as the writer's experience goes the very opposite is the result. One instance may be mentioned as an illustration. A piece of deep black boggy land was sown with vetches, which were manured with dissolved bones and guano. The crop was a poor one, having been injured by hoarfrost in the early part of the summer. After the removal of the vetches one portion of the land was top-dressed with rotten rock—the rough brown sand of the amygdaloid rock of the trap formation—at the rate of 500 loads per acre. Another portion was manured with 12 loads of farm-yard dung, and the whole was sown with oats. The crop after the rotten rock was much root-fallen, and the straw was soft, while that after the dung was tall, stout, and yielded nearly twice as much grain. This is not mentioned to disparage the use of sand or gravel on peaty soils, as in the above case the rotten rock had too short time to act, but to show that an application of farm-yard manure, instead of softening the straw, had the effect of making it stiffer."

Be Systematic.—Order is a necessary element in the success of every man, but in no class is its strict observance more requisite than with the husbandman. Show us a farmer who is orderly in the location, management, construction, preservation of his buildings, in the erection and maintainance of his fences, in the division of his farm into lots, in the selection, planting, and care of his fruit trees, in the preparation and cultivation of his soil and the putting in of his seed, in the rotation of his crops, in the management of his stock, in the purchase and care of his farming implements, in the preparation of his fuel, in the curing and marketing of his products, in short, one who is governed by these rules—"A time for everything, and everything in its time"—"A place for everything, and everything in its place"—and we will show you an intelligent, successful, prosperous and happy man.

PLOWING IN CLOVER ON CLAY SOILS.

A GENTLEMAN in this vicinity informs us that two years ago he broke up a heavy clay soil in mid-summer, turning under a fair crop of clover. The surface was afterwards harrowed and cultivated at intervals of a few weeks, in order to keep it free from weeds, and to ameliorate the soil and form a good seed-bed. It was sown to wheat in the fall, without another plowing. The crop was not an average, probably less than it would have been had the field been summer-fallowed; that is, broke up in the spring and plowed twice afterwards, with several harrowings, &c., during the summer. On plowing the field in the fall, after the wheat was harvested, he found to his surprise that the clover was nearly or quite as perfect as when plowed in. The stalks and leaves were not decomposed in the least.

What was the cause of this?

Heat, moisture, and oxygen, or atmospheric air, are the essentials of of fermentation or decomposition. The compact nature of clay prevents, to some extent, the admission of air, and hence decomposition is retarded. It may be that, in the instance alluded to, the soil perfectly excluded the air, and that this hypothesis alone is sufficient to account for the phenomenon—a phenomenon which many farmers have witnessed.

The exclusion of the air, however, is not the only cause why clay soils retard the decomposition of clover, manure, and other organic substances, mixed with it. The experiments of Prof. WAY indicate that clay has a remarkable action in reference to the fermentation of organic matters.

In one experiment, Prof. WAY took three quantities of fresh urine, of 2000 grains each, and placed them in similar glasses. With one portion, its own weight of white *sand* was mixed; with another, its own weight of white *clay;* the third being left without admixture of any kind.

When smelled immediately after mixture, the sand appeared to have had no effect, while the clay mixture had entirely lost the smell of urine: they were all decidedly acid to test paper. The three glasses were covered lightly with paper, and placed in a warm place, being examined from time to time. In a few hours it was found that the urine containing sand had become slightly putrid; then followed the natural urine; but the quantity with which clay had been mixed did not become putrid at all, and at the end of seven or eight weeks it had only the peculiar smell of fresh urine, without the smallest putridity. The surface of the clay, however, afterwards became covered with a luxuriant growth of *Confervæ*, which did not happen in either of the other glasses.

This is a remarkable experiment, and one capable of throwing light on many subjects hitherto enveloped in thick darkness. The reason that the sand accelerates the fermentation of urine, is no doubt this: All bodies possess a surface attraction for gasses, and of course, therefore, for common air. This attraction, which enables them to condense a certain quantity of air on their surfaces, is in direct relation to the extent of those surfaces. In mixing sand with the urine, we are in fact exposing the latter to a largely increased surface of air, the oxygen of which is necessary to commence the putrefaction, and thus hastening the changes which sooner or later would occur in the urine naturally.

The quick vinegar process, or *Schnellessigfabrikation* of the Germans, whereby cider, or any liquid containing sugar and a nitrogenous or fermenting body, is converted into vinegar in a few hours by filtering it through beech-wood chips, is a case in point.

But what shall we say of the action of the clay? That it retards or changes the nature of putrefaction is evident. But the question is, does it prevent the conversion of the animal matters into the ordinary products of decay; or does it allow of that conversion, and absorb those products as they are formed?

Other experiments made by Prof. WAY show that urine filtered through clay will not afterwards ferment.

As plants can take up their food only in the inorganic state, [one plant can not live on another plant, as such; its *organism* must first be destroyed, and the elements of which it is composed be reduced to their inorganic state,] if clays have the power of arresting decomposition, it follows that the chief value of plowing in clover, &c., on heavy clay soils, consists, the first year, in ameliorating the soil, rendering it lighter, more porous, &c., rather than in supplying food for the plants; and it is a question worthy the consideration of farmers, whether clay soils can not be ameliorated by mechanical means, such as plowing, &c., cheaper than by plowing under long, unfermented manures.

It follows, too, from these experiments, that if we want manures to furnish food for plants on clay soils, they must be thoroughly decomposed before being plowed under. Perhaps it would be better, under some circumstances, to spread them on the surface of the soil. We have seen, on heavy land, barnyard manure so applied late in the fall, on wheat, with good results,—better, the first crop, than when plowed under.

Sand accelerates decomposition. When clover is plowed in on sandy soils, it probably decomposes with greater rapidity, as with the urine in the experiment, than though kept moist in a heap unmixed with sand.

We throw out these ideas, in order to call the attention of observing, practical farmers, to the interesting facts above recorded, and in the hope that they will furnish us with their experience on the various points bearing on this important subject.

SOWING CLOVER.—An old Vermont farmer remarked that he was greatly prejudiced years ago against clover from thin sowing; stalks were large and tangled; couldn't mow it, and cattle wouldn't eat it. He now sows twenty or twenty-five pounds to the acre; his crop stands very thick, but not more than two feet high; cures it in small cocks, and makes beautiful hay. Land needs *rest*, like all else; give it a *good bed of clover* that it may have a long, refreshing sleep.—*Exchange.*

English farmers frequently sow as much as twenty pounds of clover seed per acre, but it is not all of one kind. Red clover, on many of their light lands is an uncertain crop, and they seed thick and use different kinds in order to secure a "catch." In this country "twenty or twenty-five pounds" of clover seed per acre is generally quite unnecessary, but it is better to seed thick than to have the plants thin on the ground. The "long, refreshing sleep" in clover should never be longer than three years, and in many cases two years is long enough to let land lie down in clover.

A WORD ON IRRIGATION.

There are thousands of farms where, at a trifling expense, several acres of meadow land may be irrigated with great advantage. The effect of judicious irrigation on grass land is perfectly astonishing. The late PHILIP PUSEY, of England, states that on irrigated grass land of moderate quality, he has kept at the rate of thirty-six sheep for five months. In other words, by irrigation, grass land may be made to produce three times as much food as land cultivated with turnips, under the most favorable circumstances—and turnips, ruta bagas, &c., can be made to produce more food per acre than any other cultivated crop.

This, it must be observed, is in England, where the climate is much more favorable to the growth of turnips than with us. The extensive introduction of the turnip crop has been one of the grand means of improving British agriculture—a large amount of food is produced at a comparatively slight tax on the elements of fertility in the soil, and its consumption on the farm furnishes a great quantity of rich manure. The nature of our climate leads us to believe that turnips can never be as extensively cultivated here as in England, but we may attain, to some extent, the same object by irrigation. The extra produce of a water meadow consumed by animals, will provide an extra quantity of manure for the upland, or arable portions of the farm. BOUSSINGAULT thinks this the only way of increasing the fertility of a farm without going off the farm for manures. The subject is one well worthy the attention of American farmers.

SOIL COLD FROM LACK OF UNDERDRAINING.

A writer in the *Quarterly Review* states that one pound of water evaporated from one thousand pounds of soil, will depress the temperature of the whole soil ten degrees. SIMPSON, in his essay, "Climate of the British Islands in its effect on Cultivation," says:

"Every gallon of water carried off by evaporation, requires as much heat as would raise five and a half gallons from the freezing to the boiling point! Without going to extreme cases, the great effects of the heat thus lost upon vegetation can not fail to be striking, and I have frequently found the soil of a field higher in temperature from 10° to 15°, than that of another field which had not been drained, though in every other respect the soils were similar. I have observed the effects of this on the growing crops, and I have seen not only a much inferior crop on the undrained field, but that crop harvested full three weeks after the other."

PARKES, in his experiments at Chatmores, found that the temperature of the drained soil averaged 10° more than that of soil undrained. He also found that the temperature of land that was well underdrained was highest after a shower. This was doubtless owing to the greater temperature of the water carried down into the soil.

Owing to the shortness of our growing season, it is no slight benefit which under-draining—not to mention other obvious advantages—is capable of conferring on the American farmer, in not only enabling him to plow the land earlier in the spring and later in the fall, but in so increasing the temperature of the soil that it is enabled to mature the crops two weeks earlier than though it was not drained.

NOTES BY S. W.

YOUR explanation of Prof. WAY's experiments and views of the action of lime in soils, and on the growth of plants, is truly interesting. It would seem that in the midst of experimental facts he is still in doubt. Humiliating as this is to the cause of agricultural science, it is far better than that dogmatism in opinion which too often mars the truth in general and chemical science in particular. This should not be so. Ill-digested scientific dogmatism is the great stumbling-block to the farmer's progress, making him in fact what he is inclined to be from indurated prejudice and habit, a mere follower of hereditary recipes! When I ask a rich-feeling farmer to take an agricultural paper, and he replies to me in that offensive egotism which indorses his own ignorance, I can but feel that even *book-farming* is somewhat to blame for his contumacy. An astute lawyer once said to me, that he "who stood in need of clients, must strive harder to be useful to them than to convince them of his own learning." Now, I can not resist the opinion that Prof. WAY, Mr. LAWES, and Dr. GILBERT, are precisely that sort of men, who would rather be useful to the cause of agricultural science, than to dazzle the world by a display of their scientific attainments. So far from being mere abstract men of chemical science, shut up in the laboratory, they are co-workers with the farmer on the farm; not for a season, but for many consecutive seasons, experimenting on every sort of soil, with all sorts of manures, each of which is thoroughly tried and the effects noted, through all varieties of seasons, wet and cold, warm and dry. They are rather learners than teachers; and as such, teaching by example, shedding forth the light of science without dazzling their readers by its glare! When the farmer comes to understand their language, which he may with a very little knowledge of chemistry, he begins to live a new life, or rather a new phase in life, in which toil and drudgery are ameliorated by that mental enjoyment which is extra, and not created by the comfortable hope of a material harvest!

But *à propos* of lime as a manurial amendment, that oasis in the desert of blowing sand, the farm of A. ANTHONY, Providence, R. I., was brought up to the clover-bearing point by leached ashes and swamp muck, after which cow manure and swamp muck kept up its great fertility. A. told me that he had tried lime as a substitute for ashes, but on such barren sand lime was too active, aside from its poverty in mineral matters. On the other hand, on the clayey limestone lands of Eastern Pennsylvania, lime is found to be an invaluable amendment to the soil; not perhaps as a restorer of a thoroughly exhausted soil, for they say there that such soils will not bear much liming, but only as a dissolvent of the inert vegetable matter left by stable manure and clover in a well-treated soil. It is also said there, that the richer the soil, the more lime it will bear profitably. Hence the common argument that lime accelerates the decomposition of inert vegetable fibre, and is there any doubt that it also acts chemically to liberate ammonia and dissolve mineral plant-food? That lime is not as useful to a sandy soil, may be accounted for, at least in part, from the fact that sand has no power to retain the ammonia liberated by lime in the soil; while clay, on the other hand, is a great absorbent and retainer of that grand *arcanum* in the structure of plants, the carbonate of ammonia.

It has been found that no flat, wet, undrained soils, are much benefitted by liming, or any other amendment, except draining; after which, especially on clays, liming is considered to be only next to stable manure as a sweetener and warmer of the soil. In Eastern Pennsylvania, where experimental farming is at the maximum, lime and green clover are considered absolutely necessary to supply the deficiency of stable and compost manures. Cheap anthracite coal favors lime-burning; so that many farmers have lime-kilns expressly for burning lime for the benefit of their farms.

The thermometer to day (11th Feb.) has risen to 44° in the shade—a point many degrees higher than it has before attained since the middle of December; but in proof of our very temperate climate, the mercury has not fallen below 0.7° this winter, and that only for two or three nights. S. W.—*Waterloo.*

FLAX SEED AND OIL CAKE.

By the Census Returns of 1850, it seems there were raised in the United States, in 1849, 562,810 bushels of flax seed. How far these figures may be correct, is uncertain, though doubtless they approximate somewhere near the true amount. We have other statistics, relating to the imports of flax seed, that can be more fully relied upon. By Custom House returns, there were imported into the United States, during the fiscal year ending June 30, 1855, 1,102,545 bushels of flax seed—in money value, amounting to 1,009,381 dollars. Exported during that year, 5,808 bushels, amounting to 6,016 dollars. Supposing the domestic crop of 1854 to be the same as when the last census was taken, we had for the year ending the 30th day of last June, the sum total of 1,658,847 bushels of flax seed, most of which, we presume, was used for the manufacture of linseed oil.

During the fiscal year above named, there was not a single pound of oil cake imported into this country; but, on the other hand, there was exported from this to foreign countries, 739,589 dollars worth of *American oil cake.* Over 695,000 dollars' worth of this cake went to England; firstly, to make beef and mutton, to feed its dense population; secondly, to supply manure to grow turnips and wheat, and to keep up the fertility of their long-cultivated soils.

I do not know the relative amount of oil cake derived from a given weight of seed, or how many cents' worth of cake a dollar's worth of seed will make; but as there was but little over a million dollars' worth of the imported seed retained in this country, and almost seven hundred and forty thousand dollars' worth of cake exported, I presume a much larger amount of cake was shipped from this country than was derived from the imported seed. How far such a procedure may comport with the farming interests of our country, is a question of grave import, and one that should be candidly and fairly discussed in all its bearings; and, Mr. Editor, I know of no one so well qualified to impart information upon this *particular subject,* as yourself. Never having visited my "Faderland" I know nothing personally of its agriculture, but I have read somewhat upon British husbandry; from this source I know something of the value of oil cake for fattening cattle and sheep, and of the high estimation in which it is held there. With suitable rations of oil cake, turnips, or other roots, and chopped straw, the animals are expeditiously and profitably fattened; hay, frequently, being entirely dispensed with; and the manure of cake-fed stock is almost enough enhanced in value to pay the cost of the oil meal.

Of how little value is a large portion of our straw for feeding purposes, unless accompanied with roots or provender; and how small a proportion of our farmers provide either for their stock. It is for lack of this "provident care" that so many millions of our cattle and sheep are annually turned to pasture every spring merely skin and bones—literally walking skeletons. In England, they have dear land and cheap labor, and meats are somewhat dearer than with us; yet the difference in our favor in the price of oil cake *here* and *there,* must be equal to the freight and insurance, and profits on it of some two or three "middle men" that step in between the oil manufacturer here and the farmer there; and this, with our present high prices of beef and mutton, may make it quite as profitable for American farmers, in many sections of the country, to feed oil cake to their stock as it is for the English farmer. It might not be profitable for the western farmers to substitute oil cake for Indian corn in feeding either their beef or store cattle. But here, in New Hampshire, hay is worth from $15 to over $20 per ton, and corn from $1.12½ to $1.25 per bushel; and yet, at these prices, thousands of cattle and sheep are stall-fed upon hay and corn for the Brighton and other markets.

To me, it seems to be a serious question to our farming and national interests, whether it is best to make our beef and mutton upon hay and corn, or partially substitute roots, straw, and oil cake for that purpose. If English farmers can make it profitable to annually purchase of us some three-quarters of a million of dollars' worth of oil cake, then it is a matter worthy of careful discussion how far it may be profitable for us to use our oil cake, instead of sending it abroad. Levi Bartlett.—*Warner, N. H.*

THE CHINESE YAM, OR DIOSCOREA BATATAS.

The agriculturists of our country are apparently very desirous of additional information in regard to the various plants which may be advantageously and extensively adopted in our farm culture, and it is a gratification to me to tender my feeble aid toward the establishment of a *true* national independence of every other country so far as regards those plants which our wide-spread Republic is susceptible of perfecting. With this object in view, I have taken especial pains to inform myself fully in regard to the Chinese Potato, or *Dioscorea batatas,* both as to its alimentary position in China and Japan and to its appropriateness for adoption by our country; and the more I have investigated, the more astonished I have become, at its indisputable claims over every other esculent we possess, and at finding that the half, and more than the half, of its remarkable useful properties remain to be told. The surprise so often expressed, as to how food was attainable by the one-third of the inhabitants of the globe concentrated within the limits of the Chinese Empire, may now find its elucidation. On consulting several Chinese agricultural works, which have been republished in the French language, I find the *Dioscorea batatas* to be therein a subject of extensive and general comment. It is there stated that its culture is universal, and extends over every portion of that vast country

And it is further declared to be a grand resource of the nation—"*une grande resource nationale*," and that the abundance of its crops, their excellence in quality, and the universal consumption, have rendered it the alimentary basis (together with rice) of that immensely populous empire. It is eaten boiled, roasted, and even in a raw state. It is also dried and ground into the meal or flour everywhere in use throughout that country. Indeed, it would appear to occupy, in an alimentary point of view, the whole space which in our country is occupied by both the common potato and by Indian corn.

The varieties there cultivated are very numerous, the skin and flesh being of different shades, varying in consistency and flavor, and one variety is highly esteemed for its medicinal properties.

In five Chinese works which I have consulted, I have found the following statements:

The *Rice*—white variety, (the one we possess,) when well cultivated in a soil that has been trenched and rendered permeable to the depth of five feet, will produce, on a space of ground ten feet long and three feet broad, sufficient food to support a man throughout a year.

It would thus appear that this vertical root enables them to make up, by deep culture of the soil, whatever deficiency exists in that country superficially, toward the maintenance of its excessive population.

The only kind of manure recommended, is that of cattle and horses, well decomposed; and poudrette is specially objected to by every writer, though we doubt not that guano might be thus appropriated.

In their directions for general culture, they state that the ground is usually mellowed to the depth of two and a half feet, but that three feet is preferable, and that the manure should be plowed or trenched in as deep as possible. The sections of root, each having one or more eyes, should be planted five to six inches deep; and this planting takes place in China the first week in April.

When treated in this way, the plants will grow vigorously, and will not fail to yield an abundant crop. Some cultivators allow the stalks to trail on the ground in like manner as our sweet potato; but others, as soon as the stalks have attained sufficient growth, place poles for them to run upon, which they quickly entwine.

In the autumn, before the ground becomes frozen, they dig up sufficient of the large roots, and place them in a cellar, for winter use; and the small roots and tubers are put in a cellar and mixed with sand, or are buried in a hole in the open ground, intermixed with sand, as the reserve for spring planting. Such portion of the crop as is not wanted for use or for sale during the winter, may be left in the ground, and can be extracted in the spring, if desired, or left to grow through the second season, when the crop will be increased three-fold over the weight of the first summer's growth.

What strikes one's mind at once as giving preeminent importance to this root, is the fact that it is in a condition for use at all seasons of the year, and may be dug up fresh every day, from spring to autumn.

In order to settle the question of its perfect hardihood in our climate, we have left twenty hills standing out the present winter, during which the mercury has been 10° below zero. WM. R. PRINCE.—*Flushing, N. Y.*

SEED POTATOES.

I HAVE more than once read accounts of experiments on the advantages of using large or small potatoes for seed. In all of them, however, there appeared to me to have been a defect, namely, the amount of ground occupied by each kind of seed was not recorded, and apparently not considered essential to the accuracy of the experiment.

In April, 1855, I planted 5 lbs. each of large, medium, and small [too small for profitable table use] potatoes. They were *Pink-eyes*. The 5 lbs. of large numbered 15 potatoes, and were cut into quarters; the medium-sized were cut into halves (lengthwise); and the small ones were not cut. I will call them, for brevity, Nos. 1, 2, and 3. They were planted in parallel rows, in hills. No. 1 occupied 20 hills (three pieces in each hill); No. 2, 27 hills (three pieces in each hill); No. 3, 31 hills (three whole potatoes in each). Ten days after the plants were up, No. 1 were much the most vigorous; No. 2, second best; No. 3, poorest. All were treated alike in after-cultivation.

I dug them on the 11th of October. No. 1 produced five gallons; No. 2, six gallons, 1 quart; No. 3, six gallons, three quarts. The produce of No. 1 I thought were rather better in size than Nos. 2 and 3; that is, rather fewer small ones among them. I further ascertained that No. 2 produced five gallons from 22 hills; and No. 3, from 23 hills, the same quantity as 20 hills of No. 1 produced.

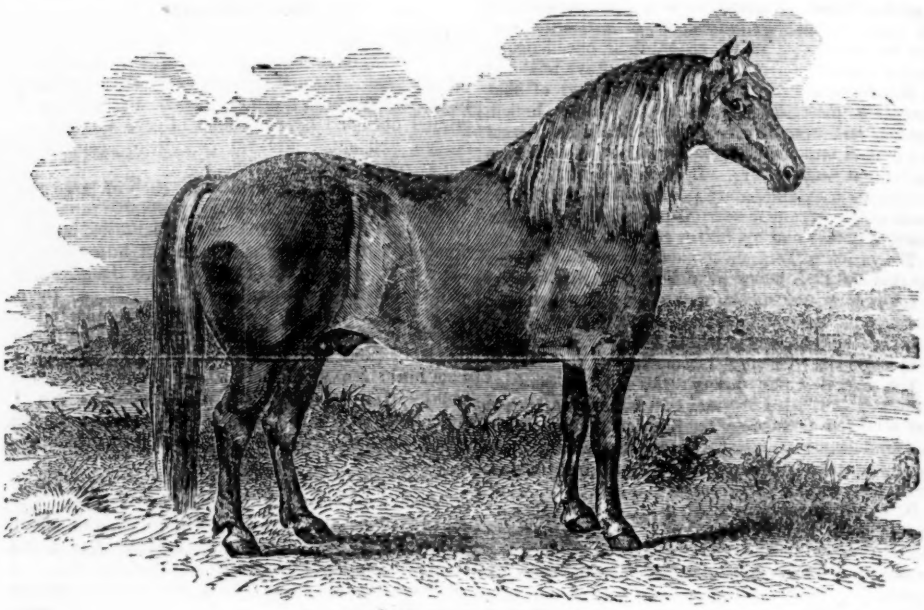
The conclusions to be drawn from the above experiment, seem to me to be these: That small seed produces more in proportion to the seed sown, by 4 to 3, because it occupies more ground; but that large seed yields more to the acre, by about one-seventh; and that of medium size, one-twelfth. It must, however, be borne in mind, that it requires 50 per cent. more of large seed to plant an acre, if they are cut into only four pieces (*i. e.*, about twelve bushels instead of eight), and that we are planting the most valuable part of the previous crop, both for sale and use. JOHN MACKELCAN.—*The Retreat, Ancaster, C. W.*

A GOOD CORN CROP.—A correspondent of the *Country Gentleman*, residing at New Britain, Ct., gives the following account of the management and yield of a corn crop:

"Field contained one acre and 71 rods, green-sward. Manured with 120 horse cart loads of stable manure, plowed 8 inches deep, and well harrowed. Marked in rows each way, 3 by 3½ feet apart. A single handful of the following compost was put in each hill—2 parts night soil, 6 parts loam, 1 part ashes, and 1 part fresh slaked lime. The night soil and loam were composted a year before using. Variety of corn—long eight-rowed; planted dry with hand planter, May 16th. In a part of the field, only the compost was covered before planting. All came up well, and was immediately dropped with ashes and gypsum. At the first and second hoeing, the cultivator was used, and at the third, a small plow. At the second hoeing, three and four stalks were left in a hill.

"The corn was cut up and carted to the barn before husking. The yield, by actual measurement, was 245 bushels of ears, each containing 17 quarts of corn—a fraction over 90 bushels of shelled corn per acre."

One hundred and twenty loads of stable manure (?) ought to give a good crop without the compost, &c.



A SUFFOLK STALLION.

AN IMPROVED SUFFOLK STALLION.

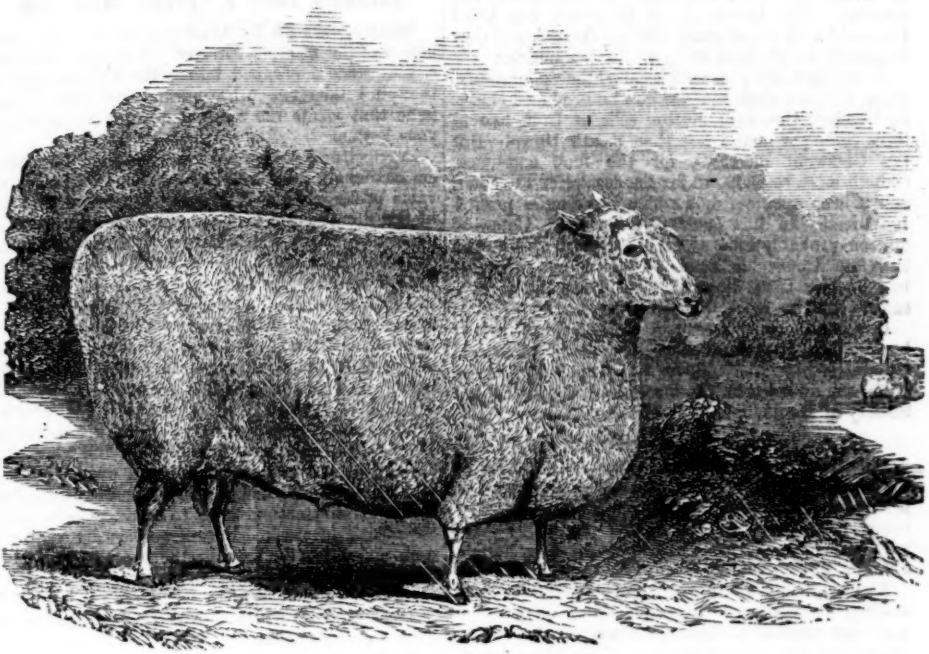
For heavy dray horses, the *Clydesdale* is the favorite breed in London and most of the cities in England and Scotland; and in some of the agricultural districts, where improved modes of cultivation make slow progress, the old-fashioned, thick-legged, snail-paced, elephantine race of farm horses are still to be found, dragging their slow length along, three, four, five, and six, *one ahead of another*, attached to an antedeluvian plow, or to a monstrous wagon with six-inch tires and other things in proportion. Such an exhibition can still be seen every day in many parts of England; but their number is lessening every year. It has been proved, that a span of active, muscular horses, attached abreast to a plow, will do more and better work than three horses *tandem*, with a boy to drive and a man to hold the plow.

Strange as it may appear to an American farmer, the introduction of the two-horses-abreast system met with decided opposition for many years, but it at length prevailed; and now, instead of being the exception, it is the rule in all the best-farmed districts of England. This new system of plowing led the way to many other improvements, not the least of which is the gradual introduction of a new style of horse, of less weight, but greater activity—a horse that weighs one-third less, eats one-third less, and does one-third more work. Such a horse is the Improved Suffolk. On the farm connected with the Royal Agricultural College, at Cirencester, there are or was, a few years ago, four spans of horses of the various breeds; and it was found that the Suffolks would do more work with less food, than any of the others. It is, indeed, the general opinion among intelligent farmers in England, that a Suffolk team will do more plowing in a day, and return home in better condition at night, than any other of their powerful farm horses.

Our engraving is an excellent likeness of the Suffolk stallion owned by Mr. Thos. Catlin, of Butley, Suffolk, England, and which took the first prize of £50 at the meeting of the Royal Ag. Society of England, held at Windsor, July, 1851, in a competition never before or since equalled in the world. Look at his compact, strong, and yet graceful form. There is no waste matter—nothing stupid or clumsy about him. His movements are active and graceful, and none can help admiring the justness and beauty of his proportions, while his strength is as that of an unicorn.

There are two or three Suffolk stallions in the United States and Canada, but those we have seen are not favorable specimens of the breed. We believe a *good* Suffolk stallion would be very useful in correcting some of the more prominent defects in our farm horses, the majority of which, although active and hardy, are light-bodied, and fit only for the road before a light carriage; and where we do find any considerable degree of strength and robustness, we generally find coarseness and clumsiness.

Heifers should Calve late in the Spring.—An English writer considers it a matter of importance that heifers should be so managed as to have their first calf late in spring, when there is an abundance of succulent food, inducing a large supply of milk. This is much better than to have them come in early in spring, when they have dry food only. The habit at first formed is apt to remain with them, and if they commence by giving a good supply of milk, they are apt to be good milkers afterwards.



A COTSWOLD RAM.

THE SHEEP OF GREAT BRITAIN.

CHAPTER III.

LINCOLNSHIRE AND COTSWOLD.

The Lincolnshire is the largest breed of sheep in Great Britain. According to Ellis, the oldest agricultural writer by whom any description of them is given, they were "the longest-legged and largest-carcassed sheep of all others, and carried more wool on them than any sheep whatsoever." For many years there was considerable rivalry between the breeders of Lincoln and Leicester sheep; the former, it was claimed, giving more wool of better quality, and the latter the most mutton. At length, says Youatt, a union was established between them; a Lincoln ewe was put to a Leicester ram, and the progeny certainly displayed, and to a very great and profitable extent, the excellence of the male parents. The wether attained its maturity a full year sooner than it was accustomed to do, and with less comparative expense of food even at that time; and when the ewe was drafted, she too was sooner ready to be sent to market, and weighed considerably more than she was wont to do, and was in higher repute and more readily sold.

Mr. Clark, of Canwick, in 1827 exhibited two wether sheep in Lincoln market, the fleeces of which had yielded each 12 lbs of wool. They were slaughtered, and the carcass of the larger one weighed 261 lbs.: the fore-quarters were each of them 73 lbs., and the hind-quarters 57½ lbs. On the top of the rib the solid fat measured nine inches in thickness!

By judicious breeding, and by means of the improved system of turnip husbandry, and high feeding, the sheep are now rendered fit for market at one year old, and weigh from 80 to 100 lbs. each, on the average. When kept till two years old, they are very heavy. Thus, three slaughtered a few years since, aged respectively three, two, and one year old weighed 386 lbs., 364 lbs., and 284 lbs.

Corswolds.—The meaning of the name Cotswold is a sheep-fold, and a naked hill or plain. The Cotswold hills, the native tract of this ancient breed of sheep, are of moderate elevation, covered with sweet and nutritious herbage; and though formerly a bleak, wild, and uncultivated district, given wholly to sheep walks, it is now inclosed, cultivated, and greatly improved. The sheep also have undergone a like improvement; so that they now rival the New Leicester in symmetry and early maturity, while they possess a heavier fleece and carcass. They have been crossed with the Leicester with decided advantage; their size and fleece being slightly reduced, but their tendency to fatten and early maturity, as well as the quality of the mutton, are much improved. They have also been crossed with the Hampshire Downs, thereby improving still more the quality of the mutton, but greatly reducing the weight of wool and carcass.

The experiments at Rothamstead show that for the food consumed the Cotswolds increase in weight more rapidly than any other breed. (See *Genesee Farmer*, for 1853, page 241.)

The Cotswolds, especially in the Southern States, have been pretty extensively introduced into this country, and are yearly becoming more and more popular. There are a few in the Northern States and in the Canadas, and they stand the climate equally as well as the Leicester and South Down. They are known in some parts as the New Oxfordshire. Their weight

of carcass and fleece has been well sustained in this country. Mr. REYWOLD, of Delaware, has killed Cotswold wethers weighing 200 lbs. dressed, and they frequently weigh from 30 to 40 lbs. per quarter.

In England, the Cotswold is called the "poor man's" sheep, because their mutton can be produced cheap. In London, Cotswold mutton sells at from two to three cents per pound less than South Down. But the Cotswold increases, for the food consumed, enough more to make up for the less price obtained; and it is an open question which is the more profitable breed. In this country, at present, Cotswold mutton probably sells as high as South Down, and therefore Cotswolds must be the more profitable breed. The time, however, will come when consumers will be more discriminating.

Our engraving represents a Cotswold ram owned by Mr. GEO. HEWER, of Ley Gore, near Northleach, Gloucestershire, England, for which the first prize of $125 was awarded at the meeting of the Royal Ag. Society of England, held at Windsor, July, 1851.

IMPROVING THE BREED OF ANIMALS.—A writer in the *London Farmers' Mazazine* truly observes: The principles of breeding animals have rather been illustrated than discovered by animal physiology—the very principles of that science having been taught before a single scientific axiom had been applied.

The watching of physiological tendencies, and availing themselves of these judiciously in practice, was long anterior to scientific research. Emulating the skill of the wily progenitor of the Jewish race, and intelligently perceiving what was required, a Culley and a Bakewell attempted and attained the production of sheep and of cattle, "ring-streaked, spotted and speckled," at pleasure. Seeing the necessity of economising food, they set about producing those animals which came to maturity early, and so produced vastly more food from the same amount of vegetation. Knowing that fat was an element of favor in a northern clime, they endeavored to obtain animals with a tendency to secrete large quantities. In order to this, they observed the qualities indicative of those propensities; and knowing that it is as true in physiology as in mathematics, that like produces like, they selected and bred from these until they stamped their qualities permanently and invariably and indelibly on the race. With these they managed to combine symmetry of form.

TRAINING A BALKY HORSE.—In India, when a horse becomes stubborn and refuses to move, instead of whipping him, as is our custom, or setting fire to straw under his belly, as is sometimes practiced in England, a rope is attached to his foreleg, and one or two persons go ahead and pull at the rope. It is said this will start the most refractory horse. The *Michigan Farmer* says a horse became balky in Detroit a short time since, and neither whipping or coaxing could make him stir. A rope was fastened round his neck, and he was dragged a short distance by another team, but this did not effect a cure. The rope was then taken from his neck, passed between his legs, and fastened firmly to his tail. In this manner he was drawn a short distance, and when the rope was taken off, the hitherto unruly animal was perfectly obedient to the will of his master. We have seen this method tried, with similar results.

EXTRACTS FROM A LETTER FROM OHIO.

INCLOSED are $3, for which you may send me eight copies of the *Genesee Farmer*. It is now more than a year since I stopped taking the *Farmer*, and although I take two other agricultural papers, I find none that meets the wants of the farmer as well as your journal.

Agricultural papers are much needed by the farmers on our prairies here. People must be taught the value of manures, &c. I know of farmers near one of the greatest markets for vegetables in the West (Sandusky City), who will give their manure to any one who will haul it away; and frequently the manure lies for years in the barn-yard before it is removed, and then it is done only to save moving the barn or prying cattle out of the miry yard in the spring, or to keep off fleas in the summer. Our prairie generally is very rich, yet manure never will hurt it if applied right. The soil through this portion of Ohio is well adapted to growing all kinds of farm produce. Wheat, Indian corn, and oats, are the principal crops. There has been a great falling off in the wheat crop during the last two or three years, owing to the insect destroying it; and farmers, in consequence, have turned their attention more to corn and oats, and to the raising of stock. Potatoes generally yield very well, and either the Irish or the sweet potato can be grown with facility. More attention is given to the raising of good fruit than formerly; perhaps owing to the high price which it commands in market, and the more ready sale.

Farming here on the prairies has been profitable for a number of years past. Crops have been unusually good, especially two and three years ago, during those dry seasons, which favored the low prairie very much. Many have made great improvements in their farms, by ditching and draining, thus bringing many more acres under cultivation; but in some instances they do not so well cultivate what they had in use before, for, among some western farmers, the more land they get under cultivation, the less they work it. EDWIN WOOLVERTON.—*Milan, Erie Co., O.*

CLOVER ON SPRING CROPS.—Clover may always be sown upon small grains with profit. We sowed clover, says JESSE BUEL, upon four acres of rye and two of barley, last spring, and notwithstanding the dry weather, it took well. After pasturing the rye stubble some ten or fourteen days, the autumn feed was sold for $12,50. The barley ground has afforded an abundance of fine feed. Say the six acres required a bushel of seed, at $6, and that the fall feed was worth $18, there will be a profit of $12, or $2 per acre. But the clover lay will furnish at least thirty tons of vegetable food to the next season's crop, if turned under the first of May, which will be no inconsiderable increase to the profits.

TO BREAK CORN STUBS.—The following plan which I adopt for breaking off corn stubs may be of use to some readers of the GENESEE FARMER. Procure a stick of timber 6 inches square, and 15 feet long, hitch a pair of horses to it, and draw it round a corn field when the ground is hard frozen, taking four rows at a time. In this way a large field may soon be cleared. It will break them off even with the surface of the ground. GEO. SHARPLESS—*McClellandsville, Delaware.*

ESSEX SWINE.

The Improved Essex holds the first rank among British breeds of swine, especially as "porkers." During the last dozen years, in the hands of the celebrated breeder, W. Fisher Hobbs, of Marks-Hall, Essex, it has probably taken more prizes at Smithfield, and at the shows of the Royal Agricultural Society, than any other breed. The late Lord Western originated the breed, it is believed, by crossing the Berkshire with the Neapolitan, with a slight dash of the Chinese and the old Essex hog. Stephens, in his *Book of the Farm*, speaks of them as follows:

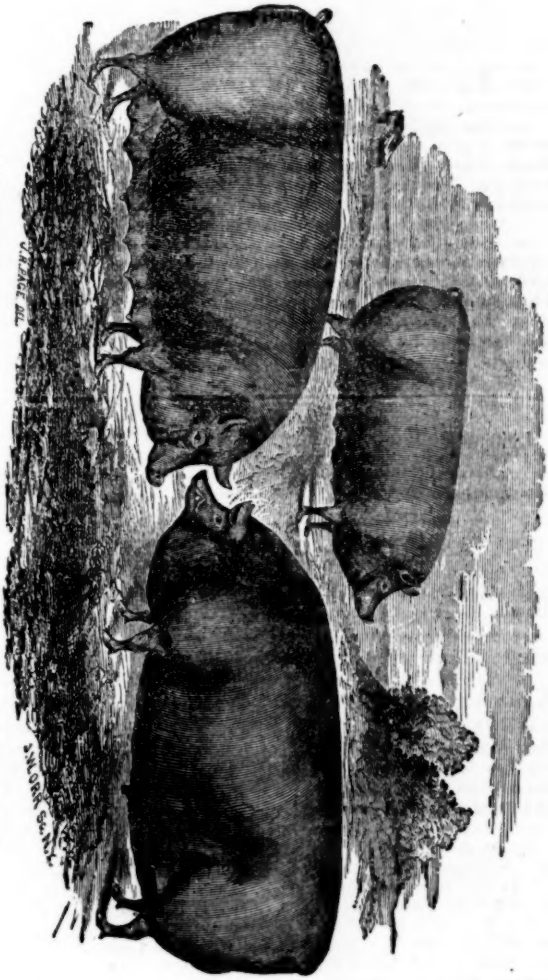
"As to the breed which shows the greatest disposition to fatten, together with a due proportion of lean, I never saw one equal to that which was originated by Lord Western, in Essex. * * They were exceedingly gentle, indisposed to travel far, not very prolific, however, but could attain if kept on to a great weight, and so compact in form, and small of bone and offal, that they invariably yielded a greater weight of pork than was judged of before being slaughtered. The offal was small, and more delicious ham was never cured than they afforded."

Martin says, "These animals fatten quickly, grow rapidly, and yield very superior meat. The hogs, when fattened, will sometimes weigh 26 or 28 stones (14 lbs.), often 18 or 20"—equal to 252 to 392 lbs.

The Essex has smaller head and ears than the Berkshire, feathered with inside hair—a distinctive mark of both; has a short snubby nose, very fine bone, broad and deep in the belly, full in the hind quarters, and light in the bone and offal. "They feed," says Richardson, remarkably quick, grow fast, and are of an excellent quality of meat. The sows are good breeders, and bring litters of from eight to twelve."

L. G. Morris, Esq., of Mount Fordham, Westchester county, N. Y., has imported, at various times, the cream of W. Fisher Hobb's stock. He has got the best that money would purchase. There are no better, if as good, in England.

Some object to the Essex on account of their color. This is a fanciful rather than a real objection. Others assert that they will not stand the heat of this climate. In regard to this, we can say that we were at Mount Fordham on one of the hottest days of last summer, and saw "Fisher Hobbs," "Aunt Chloe," "Topsey," and a host of black, chubby, fat little beauties, enjoying themselves in a clover field, as well, apparently, as they could at Marks-Hall. Certainly they appeared to suffer no inconvenience from the heat.



"Aunt Chloe." "2d Topsey." "Fisher Hobbs."

ESSEX SWINE.

PROPERTY OF L. G. MORRIS. "AUNT CHLOE" AND "FISHER HOBBS" WON THE FIRST PRIZE IN THEIR CLASS AT THE N. Y. STATE SHOW, IN 1853. "FISHER HOBBS" ALSO WON THE FIRST PRIZE AT THE U. S. SHOW, IN 1856. "AUNT CHLOE" AND "2D TOPSEY" WON THE 2D PRIZE.

A variety of the Sussex breed is closely allied to, and may be identical with the Essex. Some of this variety were introduced into this country several years since, by Mr. Henry Parsons, now of Guelph, Canada West. Sanford Howard, Esq., of the *Boston Cultivator*, says he "obtained some of the stock of Mr. Parsons, and from the experience of several years, can say he never had any swine that gave more weight of carcass in proportion to the food consumed, and never any equal to them in quality of meat."

CANADIAN HORSES.—The *Journal of the New York State Agricultural Society* for February contains an interesting "Report as to the Provincial Fair of Canada East, held at Sherbrooke, September 12–14, 1855, to the Executive Committee of the New York State Agricultural Society," by H. G. FOOTE, of Ogdensburg, N. Y., one of the delegates from this State. We extract what he says in regard to the heavy draught horses.

"A remarkably fine display of draught horses was made. The animal which took the first premium was a four year old, and his weight was represented as about 1,700 lbs.; the second best horse exceeded this about one hundred weight; the third best was a cross of the blood of the two former, which was as "the Clyde" upon a Morgan mare. He had the eye, ear, head, action and fire of the Morgan, with the giant frame of the Clyde. He was a splendid animal, but was not a pure blood, and so stood No. 3. All the draught horses of any note were of this blood. We noticed two half-bloods, two years old, each judged to exceed 1,200 lbs. These were termed "*heavy* draught" horses, while the stallion that took the first prize for "*light* draught" horses, was estimated at 1,600 lbs. This was a noble specimen, and the Governor-General of Canada, Sir EDMUND HEAD, who was present, honored him by calling him from the ring, and by special notice. In looking at these horses, I could but contrast them with the light limbed, thin skinned, small and fretful animals after which our farmers bob and jump, by convulsions, when fastened to a heavy breaking up plow. The Scotch farmers, who mostly had these animals in charge, assured me a span would draw a plow ten inches deep in breaking, with the docility and steadiness of oxen; and that they would turn their two acres per day of such plowing, and show no exhaustion."

GOOD HOGS.—We find the following in the *Boston Cultivator:*

"Mr. CYRUS STOW, of Concord, Mass., gives us an account of four Suffolk pigs, fatted by him. We saw them a short time before they were killed, and noticed that, though not remarkably large, they had great weight of carcass for the bone and offal. They were bred by Mr. C. B. CLARK. Mr. STOW says:

"'These four pigs (all sows) I bought on the 8th of February last. They weighed 145, 140, 130, 100—total, 515 lbs.—at 5½ cents=$28.32½. Deduct for shrinkage forty per cent., would leave 309 lbs. dead weight when I purchased them. They were killed on the 15th of December, and weighed 449, 374, 366, 367—total, 1556 lbs. I sold three of them at my door at 11½ cents per pound, and kept the other for my own use. Aggregate value of the four, $178.94; deduct cost, $27.48, leaves a gain of $150.61½. They were kept by me 309 days, and gained, as I calculate, 1247 lbs., or a trifle over a pound each, per day—nothing to brag of if they had been high fed—but they were kept very cheaply, and had but little meal until the last month of the time, when they were fed with cob meal (corn and cobs ground together). The remainder of the time they had the wash of the house and the skimmed milk of two or three cows, with small potatoes and pumpkins boiled up with a little meal. I keep five cows, and sell about one-half of the milk.'"

THE *American Vet. Journal* states that an excellent diet for sick animals, is simply *scalded shorts.* When a horse has taken cold, with discharge from the nostrils, the *mash* may be put into the manger while hot, with a view of steaming the nasal passages.

GRINDING CORN IN THE COB FOR SWINE.—The *Valley Farmer*, in a sensible article on this subject, observes:

"Independent of the nutriment contained in the cob of Indian corn, we believe that where the whole is properly ground together, the cob performs a very important part in the economy of fattening swine; as corn, when fed alone is too concentrated, and fails to afford sufficient distension to the organs to insure perfect and healthy digestion."

As applied to ruminant animals, this is a valid argument; but swine require much more concentrated food than sheep, cows, or even horses; and it is in our minds quite questionable whether corn, together with the other substances generally fed to pigs, is any too nutritious, or that it will be profitable to grind cob and corn together for pigs, in order to dilute the corn meal. Better dilute the corn with roots, pumpkins, apples, &c., or with bran.

FATTENING ANIMALS SHOULD BE KEPT QUIET.—For young, growing animals, exercise is necessary, in order to fully develop the frame. In feeding, tranquility is equally indispensable, a singular exemplification of which was made in the course of the experiments of the Earl of Egremont, in 1777, related in the *Annals of Agriculture*, upon some porkers, seven of which were put up to fatten in the ordinary manner in a sty, and another of the same litter, but smaller than the others, was put into a cage one week later. All were fed alike on barley meal. When slaughtered the one fed in the cage exceeded in weight any of the others. The cage was made so that he could not turn round, and had not sufficient room to rise up and lie down. There can be no doubt that too much exercise, exposure to cold, &c., retard fattening.

"PIGS CAN SEE WIND," says an old proverb. The uneasiness displayed by pigs prior to atmospheric changes, is well known. This is attributable to the extreme nervous excitability of the skin and mucous membrane, which makes this animal feel any sudden change in the condition of the atmosphere more acutely than the majority of our domestic animals. Farmers should bear this in mind, and provide places of shelter for their hogs, open to them at all times.

WARTS ON HORSES.—A correspondent of the *Country Gentleman* says:—"One year ago I had a fine young mare that had no less than half a dozen warts, from the size of a pea up to that of a half dollar. After many unsuccessful trials I applied muriatic acid (with a feather) daily, and had the pleasure of seeing them disappear rapidly, and in a few weeks there was not one wart to be seen. It is a safe and speedy cure."

TO REMOVE VERMIN FROM CATTLE.—Dissolve camphor gum in new rum, making the liquid pretty strong of camphor, and apply it on various parts of the body of the animal. It is a harmless application, so far as the animal is concerned, leaving the coat free and clean, but destroys the lice. In about two or three weeks after the first application, rub on the liquid again, in order to kill the young vermin that may have hatched out.

WHEN fed to horses and cattle, a heavy crop of carrots is soon transmuted into carrats of gold.

RAISING CALVES.—A correspondent of the *New England Farmer* practices the following method of raising calves:

"Let them suck one half the cow gives for four or five weeks, keeping fine hay before them, and giving them once a day a handful of meal or oats, or a few crusts of bread soaked in water, then learn them to drink porridge made of skim milk and buckwheat flour, or meal that has been sifted. In this way they seldom scour at all; and if one does, I take a little white pine charcoal, finely pulverized, and mix with lard enough to make it adhere; spread this mixture on a piece of bread, and give it, which is a certain cure. I feed in this way until they are three months old, when they will do to wean. A few oats should be given once a day a while longer. During the first winter they should be kept in a warm stable, and have all the good hay they will eat; after this they will grow well and keep in good condition on meadow hay. In this way it is no uncommon thing for my three year old steers to weigh 3000 lbs.

EVERY FARMER SHOULD KEEP BEES.—A writer in the *Valley Farmer* thus eloquently discourses about bees:

"In olden times, the promised land was said to be flowing with milk and honey. The homes of many of our farmers may be said to be literally flowing with milk; but how few are flowing with honey. Cows are plenty—but where are the bees? Wild in the woods; hiding their sweet treasures beyond our reach. Why are they not tamed—domesticated? Bees are as useful as chickens, and as easily raised. They afford us a luxurious food—healthy, and might be cheap. Bees require no feeding, little expense and attention. They want only a comfortable home, covered from the storm and sun, and protected from the marauding millers. They will make their own living, and do considerable towards the living of the farmer. Not many swarms can be prosperously kept in one place, but every farmer may raise honey enough for home use and a little to spare. Every gardener, every villager, might do it. A single swarm of bees, well attended to, will soon produce as many swarms as can be successfully kept in one place. All that bees make is clear gain. They get their treasures from flowers. We should have bees enough in the country to have one always sipping at every flower. The flower is all the time producing honey. The bee should be all the time gathering it. If we had a bee all the time at every flower, honey enough would be produced to supply the world. It is a means of wealth, health and pleasure. Let bees be cultivated,—let every farmer have them. They are as useful as cows, and far less trouble. A little attention will teach one to manage them."

JAPANESE PLOWING.—This is done with a small plow, with a single handle and beam, the share being like an iron scoop, of no great diameter. It is drawn by an ox, with traces, and a wooden saddle, while a small boy leads him by a stick attached to a ring in his nose, and a man holds the handle of the diminutive earth scratcher.

REMEDY FOR THE FOUNDER IN HORSES.—Take a table spoonful of pulverized alum, pull the horse's tongue out of his mouth as far as possible, and throw the alum down his throat; let go of his tongue and hold up his head until he swallow. In six hours' time, no matter how bad the founder, he will be fit for moderate service.

MONGREL GEESE.—The *Boston Cultivator*, which is excellent authority, says:

"The offspring resulting from a union of the wild goose (*Anser Canadensis*) and any variety of the domestic goose, is incapable of propagation. It is commonly called, in this vicinity, "the mongrel goose." The flesh of this bird is highly prized by epicures, and usually sells at a higher price in Boston market than that of any other poultry. The day before Thanksgiving, when turkeys were selling at eighteen to twenty cents per pound, and Bremen and other large geese at a Yankee shilling (one-sixth of a dollar) per pound, we asked the price of mongrel geese, and were told that they were selling at *three dollars apiece*. Their weight was probably about ten pounds dressed. This was an unusually high price, but they frequently bring two dollars apiece.

"These mongrel geese are very easily reared. They grow very rapidly and require nothing but grass till a short time before they are killed. In fact they are sometimes killed in good condition, directly from the pasture. A wild gander and tame goose, or a wild goose and tame gander may be mated together, and they are sure to bring up their annual brood, perhaps for half a century.

"The wild gander will seldom mate with more than one goose; he is no Mormon, and when left to his natural instincts, seems to abhor polygamy, though instances have been known in which these principles were overcome by domestication. But any tame gander will mate with several geese, whether with the wild species or any tame breed. The wild goose does not breed till she is three years old, but after that age is more certain to rear young every year than the common goose. The broods range from four to seven goslings, and all that are hatched are pretty sure to grow up, as they are hardy and not liable to accidents."

MILKING.—The *Massachusetts Ploughman* says.

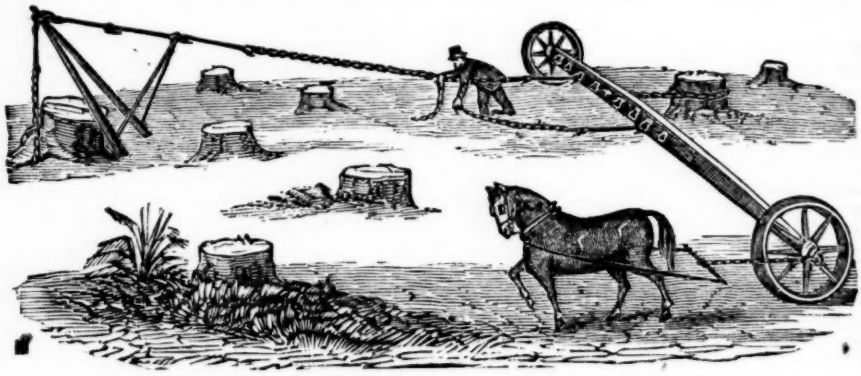
"The milker should sit close to the cow, and should endeavor by all means to be on good terms with her—for if he scolds and kicks, she will be quite likely to return the compliment. Sit close, and let the left arm be in contact with the leg of the cow. Then she cannot set her foot into the pail if she is disposed to do it. She cannot kick while her leg is in contact with your left arm, for a blow requires space between the agent and the object.

"The quickest is the best milker, for there will be a flow in less than a minute from the commencement of the process. Take advantage of this, and not let the milk flow back again. Milk out all that the cow will give, for the last of the milk, or strippings, is worth more than four times as much for butter as the milk that first comes."

POTATOES.—The London *Gardener's Chronicle* says that the potato disease is on the decline. The use of salt, mixed with the manure, is highly recommended. Chlorine and potash are necessary for potatoes. These are produced by the use of salt and ashes, with barnyard manure.—*American Institute Farmers' Club.*

Chlorine and potash are as necessary for every other agricultural plant as potatoes.

WASH FOR BARNS.—The *Horticulturist* gives the following as the best for this purpose: Hydraulic cement, 1 peck; freshly slaked lime, 1 peck; yellow ochre (in powder), 4 lbs.; burnt umber, 4 lbs.; the whole to be "dissolved" in hot water, and applied with a brush.

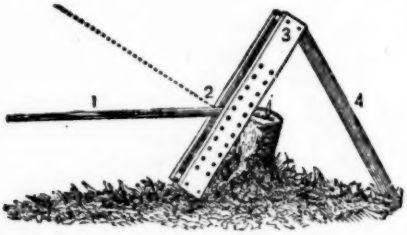


WILLIS' STUMP MACHINE.

STUMP MACHINES.

Will you please tell us the best apparatus for pulling stumps? There are thousands of pine stumps here, which are very much in the way. D. EDWARDS—*Little Genesee, N. Y.*

A correspondent of the *Genesee Farmer* recommends the following as a cheap and simple stump machine, where the land was not very heavily timbered and the stumps are now considerably decayed:



"In the sketch, 1 is a round pole 10 feet long, 4 inches in diameter at the largest end, which is well banded. Into this is inserted a bar of iron 2 by 2½ inches, drawn to half that size at the end inserted into the pole, and 2 feet long. Near the end of this two notches are cut, a little over 4½ inches apart. In the middle between these, a hole is punched, and a link 6 inches long inserted, as seen in Fig. 2. which represents the bar, large hook to hitch under a root of the stump, a link inserted in each, and a connecting hook. The links are made of round ¾ inch Swede's iron, the connecting hook of 1½ do; the large hook of a bar of old sable iron 18 inches long, bent round edgewise. 3 is a frame consisting of two oak planks 3 inches thick, 8 wide, and 7 feet long, pinned together at the end through a piece of 4 inch scantling, between the planks. There are two rows, 4½ inches apart, of 1½ inch holes through these planks, the holes being 3½ inches apart in the rows, from center to center. The holes in the right hand row are one inch lower than the opposite ones in the left. Through these holes two iron bolts, as large as the holes, are made to pass, for the bar or lever to rest upon.

FIG. 2.

To use this machine, it is set up as seen in the figure, 4 being a board for a brace, the lever placed between the planks, the notches resting on the two bolts, and the hook hitched under a root. Now elevate the end of the lever, (which needs a short pole attached by a ring to the end of the long one,) withdraw the left hand bolt and raise it one hole higher; now depress the end of the lever and raise the right hand bolt; and so on as high as you wish. The cost of the machine was $7—iron $4, making $3. Any blacksmith and carpenter can construct one. With a team and sled, and stone-boat to draw the machine about, I have seen two hands, on a lot that had been cleared fourteen years, pull in a day from sixty to a hundred stumps, mostly from ten to eighteen inches in diameter."

WILLIS' Stump Machine, manufactured at Orange, Mass., is highly recommended by Hon. SIMON BROWN, of the *New England Farmer*, by Prof. NASH, and others who have seen it work. It is not only used for pulling stumps, but is applicable to moving buildings, rocks, &c.

A strong chain is put around the foot of the stump to be removed, as represented in the engraving on the left. This chain passes over shears, or strong timbers so placed as to give the power at the stump an upward direction. In many cases this part may be dispensed with, and the chain pass over the stump. The chain continues onward to the lever, on wheels, to which the horse is attached. This lever is fastened to an ordinary stump. When the horse has passed on, according to his present position, the length of the lever, he is turned in the other direction, and at the same time, the outer chain is dropped, and the inner chain is hooked into the leading chain, and the horse passes to the extent of the lever in the other direction.

A pair of oxen may be used, if more convenient. When the stumps are thick, a large number may be pulled without removing the lever from the stationary stump. The largest stumps may be easily extracted with this machine. A pair of horses or oxen is a sufficient team to take it from place to place, and three men are sufficient to manage it in the hardest work. The removal of 100 stumps is considered a day's work.

ALWAYS give the soil the first meal. If this is well fed with manure, it will feed all else—plants, animals, and man.

MACHINE FOR SAWING WOOD.

Machine sawing, as it is called, is getting very popular in some parts of the country, and deservedly so in every case I have known, when the machine was not more than fifty per cent. below par.

The best machine I have seen was in Michigan—driven by a four horse lever power, with a railroad and car at the joint of the pitman, so as to make the saw play as level as possible; a machine saw; two logs a few inches apart for the log to be sawed to ride on; a capstan, or upright windlass, with a small cable chain dogged into the back end of the logs, passing under the saw; a guide just back of the saw, also a tail-piece on the end of the saw, and a light, movable guide to steady it. The saw was raised while in motion by the tail-piece; a man at the capstan would move the log along in a few seconds, the man at the saw would let it on the log, and the sawdust was immediately flying as fast as one could desire. The owner took a hand and two horses with him, and two men and two horses more were required, which the employer furnished as he moved from place to place; and though the logs were small, he sawed for ten cents per cord, or $4 per day.

I bought an old slow motion threshing power, got a frame made to strain a cross-cut saw, like a buck-saw. I had to make the breast of the saw one-half or two-thirds of the length nearly straight, otherwise I have the Michigan rig; and by giving one hundred revolutions of the crank in a minute, I have sawed off, with two horses, a green beech two feet in diameter in one minute; and think it would not be abuse to my small span of horses to make them saw a cord of stove wood in ten minutes. My sawing rig was a crazy affair at first, but, by constructing the greater part of it a second, and some even a third time, I have an excellent machine saw. The weight of my saw and frame is less than seventy pounds, and consequently it must be set down very solid. Twelve of my neighbors last winter drew logs for me to saw, and they usually had a load of blocks to draw back. My price is twenty-five cents per cord, or one-third of the blocks. When the log is half sawed up get the diameter, which multiplied into itself and the product multiplied by the number of cuts and one-tenth added, gives the measure after splitting and piling, at the fineness we usually split it.

A slow-motioned machine will do considerable business with a machine saw, especially if the saw is stiff enough to bear a heavy pitman and a long crank. In such cases the saw should not be filed to cut much from the crank, but mostly towards it. I know of such an one that performs nicely with one horse, and consequently is not strained. It will saw stave bolts, stove wood, etc., as fast as the owner desires, as he tends and rives, or splits, without help.

Almost any kind of power may be adapted to sawing. For five winters I sawed my toughest logs to split, with a sheep churning power, sometimes as fast as one cord in two hours, and the sheep kept fat.

You need not call a machine A No. 1 unless each horse and hand can comfortably saw ten cords per day from fair logs. Many will not do half that, and men who undertake to saw with them are not likely to succeed in this business, which is yet in its infancy. I would advise but one or two men in each neighborhood to go into the business, to get good machines, and to saw during the winter as much as they can.

I would like to be informed as to how the tread powers perform sawing logs. I suppose they are better than the lever ones driving circular saws;—however, mine will do something in that line, although I am obliged to add five-fold to the speed of the driving wheel. I have a rig similar to the saw table used for cutting off slabs, nine feet long, which will cut off limbs as large as two men can lay on.

The motion of a tread power has to be regulated, as the force is uniform, let the sawing be hard or easy. I am told a spring pole is used to add to the weight of the saw.

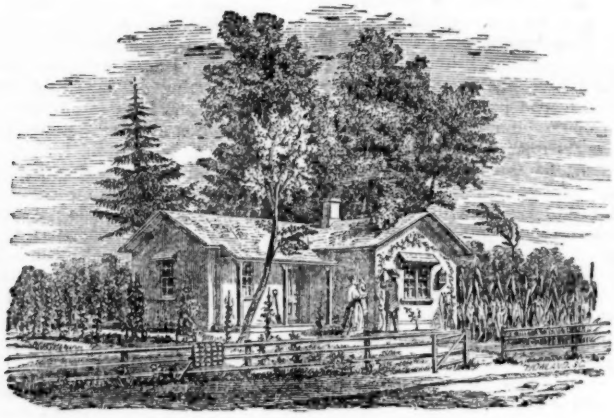
Our best sawing rigs do not cost over $20; and I know of one respectable one that I should think did not cost $10, saw and all. But I do not advise cheap machines, without the builder knows well what he is about. J. W.—*Hannibal, N. Y.*

THE ROLLER AND ITS USES.

The roller is in many ways serviceable on a farm, and it is an implement which every farmer, with trifling aid from the smith, may shift to make for himself. It may consist of a log of two or three feet in diameter, and eight or ten feet long, nicely smoothed on the outside, with gudgeons in the centers of the ends, a frame, and tongue and shafts to draw and guide it by. After sowing small grains and grasses, the roller should follow the harrow. It breaks down the clods, smooths the surface, and presses the earth to the seed, and thereby causes more of it to vegetate and grow than otherwise would; for if the earth does not come in close contact with the seed, it remains dry, and is lost. In the spring, as soon as the fields are dry, and firm enough to resist the feet of the cattle, the roller is very beneficially applied to meadows and winter grain. At this time the surface of tilled ground is crusted, and generally checked with small fissures, which expose the collar (the part which connects the roots and leaves,) and roots to the drying influence of the sun and winds. The roller breaks and pulverizes the crust, and renders the soil more pervious to heat, and closes the fissures. It is also serviceable in partially covering the crowns of the plants, which induces them to send out new roots, and to send up more seed stalks. This effect is particularly noticeable in barley, when the roller is passed over it, after it has become three or four inches high. If winter grain is harrowed in the spring, the roller may follow the harrow.

In rolling grass lands it is necessary to attend in a particular manner to the season, as it cannot be performed to advantage when the surface is either in too dry or too wet a condition; if too wet, the ground will become poached by the cattle's hoofs; and if too dry, the roller will make little impression in leveling the surface; and it is generally necessary, if the roller be of wood, to add to its weight for grass grounds, by placing stones in the box which is attached to it for that purpose.

Save the Old Bones.—The value of bones in almost any form, as a manure for field or garden, should induce farmers to save them for this purpose. In the winter, especially, large quantities might be gathered, to be broken in spring and mixed with compost, or applied directly to the soil. For pear trees—for grass lands, for most kinds of vegetables—nothing better can be found. Then save the old bones, and though you fail in making "improved superphosphate," you will not fail in benefiting your land, and increasing its productiveness by the application.



DESIGN FOR A ONE-STORY COTTAGE.

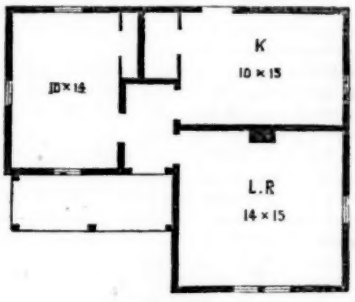
PLAIN ONE-STORY COTTAGE.

We are no advocates for one-storied houses. The cost of foundation and roof is nearly as great as for houses of two or three stories; and we can not believe it healthy to sleep so near the ground, unless more than usual precautions are taken to ventilate the bed-rooms. But there are those who must content themselves with a small cottage; and it would be clearly inappropriate to make a two-story house, when the dimensions of the ground floor hardly exceed the proper height of a story. In places exposed to violent winds, a low house is often most suitable.

One-story houses have some advantages. The rooms are all on a level, greatly facilitating the in-door work. There is no climbing up stairs; nor can "children break their necks by falling down them, or from chamber windows."

The accompanying design for a cheap one-story cottage, we take from *Village and Farm Cottages:*

"It is needless to say for whom this plan was intended, as the whole family is in sight. The owner, whom you see so busy with hammer and nail, is one of that independent sort, who like to do things in their own way. On the edge of the village he bought a piece of ground, but partly cleared, and which nobody else had thought of. Here, amid the spared trees, he put his house. He wanted but three rooms. A veranda, where he could sit in the shade, and enjoy the fresh air, he was resolved to have. To carry out his own views of convenience and comfort, he disregarded the advice of neighbors, who insisted that it would be quite as cheap, and much better, to build his house "regular and square." He did nothing for mere fancy. The cornice is unornamented, the front door plain, the window caps are strips of plank sustained by three-cornered blocks. An evident purpose pervades every part of the plan. At first it looked so plain, compared with neighboring houses, which were tricked out in gingerbread finery, that people laughed, and called it barn-like. Not so now. Prairie roses, planted and trained by the owner's own hand, already supply the want of pilaster and cornice. Honeysuckles will soon climb the slender columns of the veranda, and hang between them in fragrant festoons. Ere long, grape-vines will display their purple clusters, where now the bean-poles stand. The maize-patch, at present somewhat too near, will be replaced by grass and flowers; and then, perhaps, some who once scorned the homely dwelling will stop to gaze, and long to enter



PLAN OF FLOOR.

"Let them enter. They will find every thing in order within. The interior of the house was planned to suit its mistress. Each room is entered directly from the entry, and this being the only connection between them, no one can be used as a passage way to others. The kitchen, with all its sounds and odors, is effectually separated from the sitting-room. Each of these rooms is supplied with a pantry, and a back-door opens out from the latter. The inside walls are neatly papered. The doors and trimmings are plain and substantial.

"Height of rooms, 8 feet 6 inches. Cost, estimated at $650."

A few general Rules for Building.—Prefer lasting to perishable materials, even if more costly. A small, well built erection, is better than a large decaying shell.

Discard all gingerbread-work, and adopt a plain, neat and tasteful appearance in every part. Far more true taste is evinced by proper forms and just proportions, than by any amount of tinsel and peacock decorations.

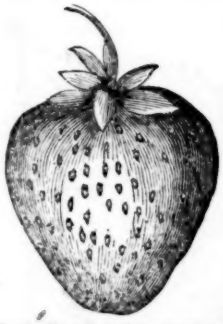
Where convenient or practicable, let the plan be so devised that additions may be subsequently made, without distorting the whole.

The first floor of any house, however small, should be at least one foot above ground, to guard against dampness.—*Illustrated Annual Register.*

Horticultural Department.

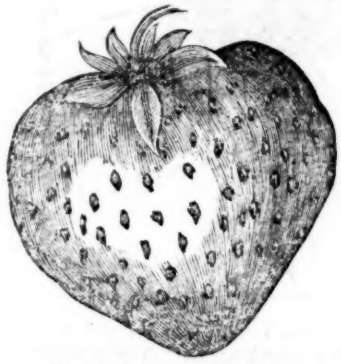
THE SMALL FRUITS.

THERE is both pleasure and profit in growing fruit. The farmer of course grows fruit, as he does wheat and corn, for profit. Yet, in addition to this profit, it furnishes his family with the most delicious luxuries earth can yield. The well kept garden is the home of beauty. To the sight, the smell, and the taste, the garden affords the highest gratification. Those who reside in villages and in the suburbs of cities, cultivate fruit for the pleasure it affords. There is enjoyment in planting, in pruning, in cultivating, in watching the buds and the blossoms, and the full ripened fruit. To all, but more particularly the latter class, we must recommend the cultivation of the smaller fruits, as affording the greatest amount of pleasure for the least means and space.



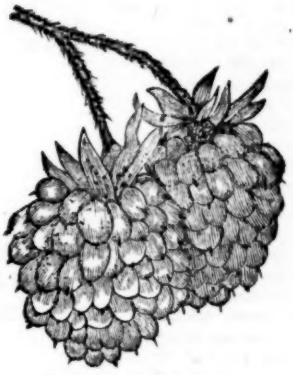
BURR'S NEW PINE STRAWBERRY.

STRAWBERRIES, we place first, because the earliest fruit to delight our appetites. The strawberry requires a *good, deep soil*; that is, a soil plowed or dug eighteen inches deep, and enriched with well-rotted manures. The plants should be set about a foot apart each way, and kept free from weeds and runners. After the bed has been planted about two years, start another, and by the time this begins to bear well, the old one will be pretty much worn out. Those who plant for the market would do well to plant in rows about two feet apart, and one foot in the rows. This allows the use of the cultivator between the rows. Strawberries may be planted during any of the spring months, and from the middle of August to the middle of September. If done late in the spring, or during the warm weather of August, a showery day should be selected.



HOVEY'S SEEDLING STRAWBERRY.

FASTOLF RASPBERRY.



RED ANTWERP RASPBERRY.

The following would be a very good assortment for a small collection: *Staminates*—Large Early Scarlet, and Boston Pine. *Pistillates*—Burr's New Pine, Hovey's Seedling, and Crimson Cone. The latter is a beautiful berry, but rather too much acid for the taste of some. When eaten with cream and sugar, however, it is not excelled, and most of the Strawberries we see in market are of this variety.

KNEVETT'S GIANT RASPBERRY.

RASPBERRIES.—This delicious fruit receives little of the attention its merits deserve. It is hardly possible to purchase a quart of raspberries in any one of our smaller towns or villages. It succeeds the strawberry in ripening, and will well repay the best of care. A cool, moist location on the north side of a fence or a slope is the best; and the soil should be *rich* and *deep*.

The plants should be set out early in the spring, three to four feet apart, and be kept clean and well cultivated during the season. Each plant should have a stake three or four feet high driven firmly beside it, to which it can be loosely tied. Every spring examine the plants and cut out the old canes that bore the previous year, and trim out the young suckers so as to leave only six or eight canes in each stock. Then take off about a foot of the ends of the shoots that are allowed to remain, and tie them up neatly to the stakes. In September it is well to pinch off the ends of each shoot This will check the growth, and help to ripen the canes.

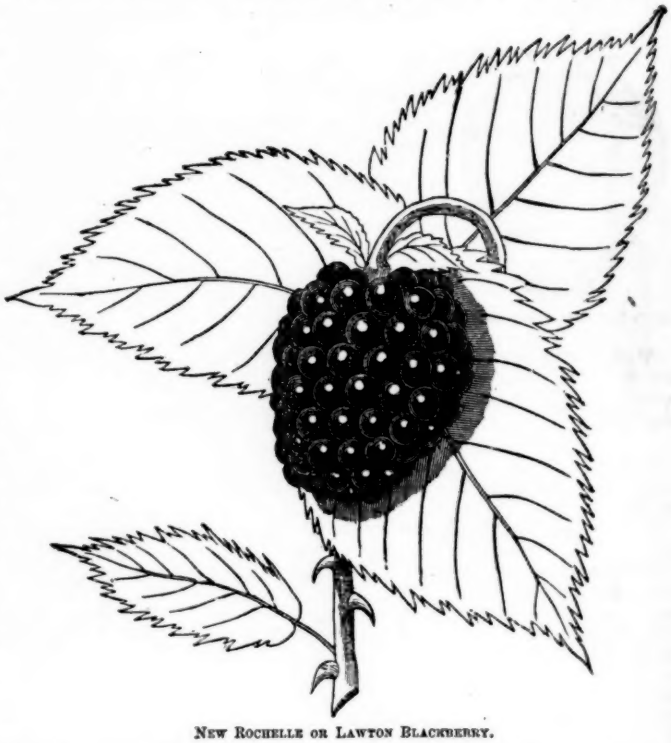
As the finer varieties of raspberries are somewhat tender for our climate it is well to protect them in winter, and perhaps the best way is to lay down the canes in the fall, and cover them lightly with soil. If a little earth is placed near the roots on the side where they are to be bent down, there will be no danger of their breaking. We give a few of the best varieties, with descriptions, from R. G. PARDEE'S work:

Fastolf.—This fine variety originated at Fastolf Castle, near Yarmouth, England, where it attained a high reputation, which it has nobly sustained in this country. It is not quite so hard for market fruit as the Antwerp, but is rather soft, and of rich, high flavor, and the fruit is very large, of a bright purplish red, and is a large bearer. It requires winter protection.

Red Antwerp.—This variety has long been the standard sort, both in this country and Europe, and is a very fine fruit. So many spurious sorts are now sold under this name, that it is difficult to obtain the genuine, in many places. The Common Red Antwerp is smaller and round; while the true is large, regularly long conical, dull red, with a rich, sweet flavor. The canes are of good strength when well cultivated, and the fruit ripens early in July. It also requires winter protection.

Knevett's Giant.—We have sometimes thought this variety a better bearer than the Red Antwerp, but we do not know as it has any superiority other than being more hardy. This, however, bears a much larger crop in consequence of winter protection.

THE BLACKBERRY.—Considerable effort has been made of late, to improve the blackberry. The *High Bush* and the *White Blackberry* have both received some notice, but the only one that really seems worthy of cultivation is the "*New Rochelle, or Lawton Blackberry.*" It was discovered in the fields at New Rochelle, on the Hudson River, and brought into garden culture. It was afterwards disseminated by



NEW ROCHELLE OR LAWTON BLACKBERRY.

Mr. Lawton. It is perfectly hardy, and throws up vigorous, upright shoots, many of them over an inch in diameter, with lateral branches, all of which are covered with fine berries, a portion of them ripening daily, in moist seasons, for six weeks. They have been found so large that 72 filled a quart.

The Currant.—This is perhaps the most valuable of all our small fruits. It can be used in so many ways, ripe or green, bears so abundantly, flourishes so luxuriantly under good care, and bears ill usage with such a good grace, that we consider it indispensable in every garden, large or small. It may be cultivated either in the form of a bush or of a small tree, and all old and superfluous wood should be cut out, and the suckers removed. Thorough manuring, with proper pruning, will produce you abundance of fine currants. When the plants are six or seven years old they should be replaced by young ones.

Houghton's Seedling Gooseberry.

The *Black Naples* is said to be the best black currant. The *Black English*, with proper culture, is very fine.

The *White* and the *Red Dutch* are fine and productive.

The *White Grape* is a good white currant.

The *Cherry Currant* is the largest of all red currants, but rather sour for our taste.

The *Victoria* is a fine and distinct variety, both in fruit and foliage. The bunches are remarkable for their length, frequently measuring six inches, and numbering thirty berries and upwards in a bunch. The fruit is in size between the Dutch and the Cherry. The color is a very light, beautiful red, and in season it is later than any other.

The Gooseberry.—In England this is the finest and most popular of all the small fruits. The climate of this country is not adapted to its culture, and the English varieties almost invariably mildew. Nurserymen have been selling gooseberry plants, either imported from England, or propagated from English sorts, for the last fifteen or twenty years, and yet gooseberries are as scarce now as ever. It is hardly possible to purchase a quart of gooseberries in any of our markets. And yet the plants should come to perfection in two or three years. We have no doubt that for every bushel of gooseberries raised in this country, from English sorts, $500 have been spent for plants. This is rather a dear joke, and unless some method is devised for growing fruit free from mildew, it would seem well to abandon the thing for a while.

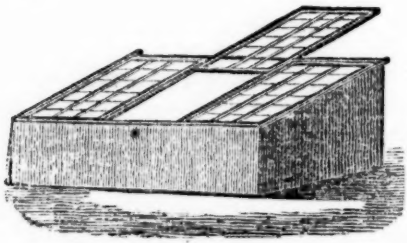
In England, the gooseberry is the favorite fruit of the poor. It bears enormously, and almost under any treatment, and is a popular and delicious fruit. Here it is quite different. We have seen miserable specimens exhibited and named, at our horticultural shows, all covered with mildew, that would be thrown away in England. Occasionally statements are made in the agricultural journals, that some person has discovered a remedy, and succeeded in growing gooseberries free from mildew. But the remedy that succeeds in one place and season, fails in others. There is, however, an American variety called *Houghton's Seedling*, which is less subject to the disease than any other. Berries rather below medium size, oval. Skin thin, reddish-brown. Flesh very fine, tender, and sweet. Those who desire to plant should give this the preference.

Fruit in Oregon.—A correspondent of the *Country Gentleman* states that the fruit crop of Oregon for 1854 sold for $200,000. One grower, whose oldest trees were brought across the plains ten years since, and then no larger than pipestems, sold his crop in San Francisco for the sum of $20,000.

FARMERS' HOT-BEDS.

When we consider how easily a hot-bed can be made, it is surprising how few farmers avail themselves of its advantages. Our seasons are so short, and we have occasional frosts so late in the spring, that without a hot-bed or a cold frame, it is impossible to have a good garden. With it, every farmer may have his table constantly supplied with the most delicious vegetables of the season, without any expense except a little care and attention.

Hot-beds should be placed in a dry situation, exposed to the east and south, and protected by fences or buildings from the north and north-east. A hole 2 to 2½ feet deep, and a little larger than the frame, should be dug and filled with fresh horse manure, treading it in pretty solid to prevent too rapid fermentation. The manure should be almost two feet higher than the ground, and level at the top. As soon as it has settled somewhat, and commenced to heat, the bed should be covered with light mold from six to eight inches deep, according to the plants to be grown.



A frame 9 feet long and 6 wide, with three sashes, such as is shown in the annexed engraving, is a convenient size. Every farmer should have two of them, one of which could be used as a hot-bed, and the other as a cold frame.

Celery is a most delicious salad, seldom grown by American farmers. It requires but to be known to be appreciated. The great difficulty in getting good celery lies in the great length of time required for the germination of the seed, and the slow growth of the plants while young. To obviate this, the seed should be sown this month in a hot-bed. A square foot of the hot-bed would be enough to start all the plants required. Five seeds in a square inch is not too thick. When from one to two inches high, the plants should be pricked out into the cold frame, and when four or five inches high they should be transplanted into a warm border. Some will object to so much labor, but it is the only way to get strong, stocky plants. Of their subsequent management we will treat in a future number.

A few radishes and lettuce should be sown early in March. The former will be large enough to eat, and the latter can be transplanted into the cold frame in time to allow tomatoes, melons, &c., to be sown after them.

Cauliflowers, cabbage, &c., may be sown any time this month in the hot-bed, and when two or three inches high, if the weather is not warm enough for them in the open ground, they should be transplanted into the cold frame. From this they may be set out on the ground where they are to remain, or what is better, they can be transplanted into a warm border, where they will become strong, hardy plants, and in the mean time the ground can be made ready for them.

The hot-bed will require daily attention. Sometimes a few minutes neglect, when the heat is steaming up from the fermenting manure beneath, and the sun's rays pouring down from above, is sufficient to scorch and destroy the plants. The seeds should not be sown till the bed has attained a moderate and steady heat. Afterwards, the temperature of the frame should be kept as uniform as possible. At night the frame should be covered with a mat or blanket, and on warm, sunny days the sash should be put partially down so as to admit plenty of fresh air. If the day is cold, the frame must be kept closed. The soil should be kept thoroughly moist, but not too wet. The water ought not to be used cold from the well, nor in large quantities at a time, but should be slightly warmed and applied in the evening with a fine-rosed watering-pot.

Celery, lettuce, cauliflowers, cabbage, and other plants which are transplanted without difficulty, may be sown in the loose, light, thoroughly decomposed mold of the bed, but melons and cucumber seeds should be planted in small blocks of inverted turf, with an inch or so of loose mold. The roots of the young plants penetrate into the turf, and the plants and turf can be removed together into the open ground without checking the growth of the plants.

CHOICE VEGETABLES.

For some years past we have taken particular pains to import into this country the rarest and best vegetables of Europe. Among the best varieties that we have had the pleasure of introducing, we will name and describe a few worthy of general cultivation.

Early Paris Cauliflower.—This is an excellent variety of a superb vegetable, and is peculiarly adapted to our climate. It forms beautiful large white heads, and will "head" as readily as cabbage, and is in every way as easily raised. We have cultivated the variety for four years, and the more we know of it the more we prize it. Beautiful specimens from seed imported by us, were exhibited at the last exhibition of the Horticultural Society of the Valley of the Genesee, and after taking the premium, and receiving special notice from the committee, were sold at a high price. Every market gardener, and every one who grows vegetables for family use, should grow the *Early Paris Cauliflower.*

The Lenormand Cauliflower.—This is a rather larger and later but superb variety, and is also well adapted to culture in this climate.

Early Oval Rose Radish.—This is a beautiful early radish. It is mild, tender and crisp, and bears no more resemblance to the tough things that are commonly sold for radishes, than a "*choke-dog*" pear does to a fine *Virgalieu.* It is an excellent variety for forcing in hot-beds.

Chinese Rose Winter Radish.—This is the finest winter radish. It is of a beautiful deep rose color, and of excellent flavor. It should not be sown until about the time of sowing turnips. For winter use they should be covered with earth in the cellar, and they will keep fine and crisp until spring.

Early French Short Horn Carrot.—This is the best carrot grown for the table. Its flavor is pecu-

liarly mild and sweet, and it is prized by the French for soups.

For a number of years we have imported a small supply of these seeds, but not half enough to supply our friends. This year we ordered a larger quantity, and have just received direct from the establishment of Messrs. VILMORIN & Co., Paris, France, a fine collection of both vegetable and flower seeds, a list of which may be found in our advertising columns.

COAL ASHES FOR FRUIT TREES.—A correspondent of the *Homestead* recommends those who are troubled to get rid of coal ashes to sift them every morning round the base of fruit trees and shrubs. He says:

"There is some virtue in them as manure, and there is also the benefit of their protection against changes of temperature. I believe it is generally admitted that frost, of itself, does not injure trees or shrubs, or vegetables, but that it is generally the alternation of cold and warmth—freezing and thawing—which does the mischief. Now if a suitable body of ashes be deposited around a tree, say some three or four inches (or more) in depth, directly around the collar, and gradually slanting off, it soon settles down into a compact mass. This not only prevents the penetration of frost, but diverts any superabundance of moisture caused by the falling rains and thawing snows of late winter and early spring.

"In many cases a coating of manure is to be recommended as a first application, to be followed by a coating of sifted ashes.

"The presence of snow on the ground is no obstacle to the deposit of the siftings, and the work should be regularly pursued in all weathers throughout the winter.

"An apple tree in the garden of a friend, hitherto unproductive, bore an abundant crop last year. Other causes may have produced this result, but in my opinion it was chiefly in consequence of the fact that his coal ashes were all sifted, *by mistake*, around the base of this one tree.

"Our peach and apricot blossoms are often blasted by the frosts which sometimes occur quite late in the spring. My theory is that the danger may be obviated by retarding the blossoming of the trees, and I know of nothing better for the purpose than coal ashes, applied as above indicated, and suffered to remain until late in the season."

MCDOWELL'S RHODODENDRON.—The January number of the *Horticulturist* gives an engraving of a new Rhododendron, found by Mr. MCDOWELL in Macon county, N. C. It grows to the height of four or five feet, and is easily transplanted and cultivated. It is stated that no American flower exceeds this in beauty, and in magnificence it is second only to the Magnolia. Its color is a bright crimson, approaching scarlet, and the panicles are composed of twenty or thirty flowers, forming a conical mass as large as a man's head. The leaves are evergreen, of a deep color. The spot where found is on the top of almost inaccessible mountains.

GRAPE CUTTINGS.—A well known grape grower of Cincinnati, ROBERT BUCHANAN, says that he sold last year from his vineyard, 14,000 cuttings, and thinks that the whole number sold in one season would number 2,000,000 cuttings and 300,000 stalks.

COLD WEATHER AND THE FRUIT BUDS IN THE WEST.—We have received a great many letters from various parts of the Western States, expressing the belief that the cold weather from the 8th to the 12th of January has killed most of the peach buds. In several parts of Wisconsin the thermometer descended 20° below zero. At the present writing (January 25) the peach buds are believed to be all right in Western New York. Our coldest night was 12° below zero. The Ohio *Cultivator* says:

"It is generally admitted that the weather on the 9th inst. was the coldest ever known throughout Ohio. The mercury in some parts of the State descended to 18° or 20° below zero, as is known by reliable reports from Cleveland, Sandusky, Cincinnati, Columbus, Delaware, and numerous other places. This is an average of several degrees colder than the cold snap in January, 1852, although in this vicinity, and in several other parts of the State, we think the degree of cold was nearly as great at that time as this.

"It is too soon as yet to speak with certainty of the effects on fruit buds; but from past experience, as well as present appearances, it is probable that peach buds are generally killed, and some of the trees much damaged. Apples and other hardy fruits we hope are uninjured."

HORTICULTURE IN WESTERN NEW YORK.—The *Year Book of Agriculture* says:

"The progress made from year to year in the cultivation of fruit is a marked feature in American agriculture and economic industry. It is stated that at least one thousand persons, in the vicinity of Rochester, New York, alone, are employed in the cultivation of fruit trees, the sales of the products of whose labor amounted, in 1854, to half a million of dollars. More fruit trees, it is also said, are raised in Monroe county, New York, than in all the United States besides, and these find a market in every district from Maine to the interior of California. Indeed, throughout the whole of Western New York, fruit is rapidly becoming one of the staple productions."

APPLES THE SHEET ANCHOR OF AMERICAN AGRICULTURE.—The *Rural New Yorker* says:

"Speaking of apples, H. T. BROOKS, Esq., President of the Wyoming County (N. Y.) Agricultural Society, expresses the opinion that apples may be to American husbandry what turnips are to that of Great Britain, and his experiments in feeding them to his domestic animals, justifies a high opinion of their value. They can be grown with greater ease and certainty, at any rate."

How many bushels of apples can be obtained from an acre of good, thrifty, well-managed trees, taking one year with another? Will some of our correspondents answer?

MAXIMS.—Generally speaking, the smaller the quantity of fruit on a tree, the higher the flavor; therefore, thin all fruits in moderation, but avoid excess; a single gooseberry on a tree or a single bunch of grapes on a vine—no matter how fine it may be—is a disgrace to good gardening.

Though rapid growth is desirable in succulent vegetables, this is not the case with most flowering shrubs, which form bushy, and therefore handsomer plants when grown slowly.

PLANTING SHADE TREES.

MESSRS. EDITORS:—It is one of the distinguishing features of the tillers of the soil, to exercise a more fraternizing feeling than that of any of the mechanical branches, in imparting information for the public weal. Happy for our calling, few, if any, enlightened minds fear the result individually, of imparting "secrets of the trade," and thus all profit by a general interchange of ideas and experience. True we sometimes find screwed up souls, who on telling some little trick, that makes so and so work easy, expressly desire the information to be kept for the benefit of *us*, with strict injunctions not to make it common property to the world by publishing it in the *papers*. It is needless to say this injunction is too exclusive—if it is worth knowing—to prevent departing from such confidential advice.

Now, Mr. Editor, this is a terribly rambling statement, as we have certainly no new dogma to propose, and started merely with the intention of saying a few words on planting shade trees, preceding it by some sort of introductory remarks.

There is nothing new in what follows, and all are perfectly familiar with the details of planting trees who lay any claim to the first principles of gardening. For such it is not written, but for that large class of persons who select a very large tree with very small roots, and expect to soon luxuriate under its pleasant shade. We will relate a case in point which occurred some two years ago. A gentleman in this city, well known for his rare talents, though not in this sphere, on ascertaining some fine shaped shade trees growing on this place were to be removed, expressed a desire to obtain three of them if they *would grow*. On being informed if properly removed and replanted there would be no difficulty about their growing, began already to anticipate the delightful shade they would soon afford his naked dwelling, though several ineffectual attempts had previously been made at planting. The trees being some fifteen feet or more high, and robust, some care was necessary in the removal to ensure success. A trench was commenced some four or five feet from the boll of the tree, and the soil gradually worked from the roots, especially the fibres, with a fork, breaking as few as possible, till the whole was laid bare. After the trees were all up, the gentleman in question coming along, was surprised to see so many roots, and to our horror, proposed to cut off most of them, or double them up in planting, as the stone he proposed taking up in the side-walk would only allow a *small hole* for the roots. Here then, laid all his previous difficulties; the roots having to be cut in conformity to the size of the hole rather than disturb the flag-stone. Being inexorable as to the way of planting, if at all, the stones were removed, and place sufficiently large was made to take all the roots comfortably, some fresh soil added to ameliorate the "Albany clay," and now he would not take fifty dollars for his trees.

So much for a little extra but necessary trouble. The principal reason why so many shade trees are planted, and yet so few ever thrive and become trees, is owing to the mania for large trees, whether the roots are proportionable or not. If all those who contemplate planting a shade tree in front of their dwellings, would seek for trees with plenty of roots, rather than a large head, and carefully dispose those roots in the fresh soil, and if poor in its nature, bringing a little fresh to mix with it, for which nothing is better than street earth laid by some time to sweeten, they would have the satisfaction of ascertaining that such extra care is compensated by success, while the reverse will as surely follow the opposite treatment. EDGAR SANDERS—*Albany, N. Y.*

RAISING FRUIT FOR MARKET.

MESSRS. EDITORS:—At the present time there seems to be a perfect mania created for fruit raising. Our nurseries are propagating and sending out their millions of trees annually, and large numbers are rushing into fruit raising. Our horticultural societies are adding fuel to the flame, and urging farmers to abandon wheat and grain culture, on which our portion of the State has grown rich, and turn their attention almost exclusively to fruit raising. Who has forgotten the Multicaulis and Tree Corn rage, or the later Shanghai fever? Almost every year something comes up to work on the excitable natures of the "universal Yankee nation." Many of these are valuable, and if judiciously managed, may be productive of great profit. It is the same with fruit culture. I have no doubt that farmers may largely increase their orchards, especially of those kinds not perishable. Judiciously managed they may be made the most profitable portion of the farm. But does not reason and experience show the fallacy of the position taken by some leading nurserymen, that if all Western New York were stocked with orchards, the market would still be good. I have no doubt that the demand will increase, and new markets be opened every year, but not in ratio with the supply, if all farmers rush headlong into fruit growing.

The proper and reasonable course, and in the end, the most profitable one, would be, if a farmer has a farm well adapted to grain growing, and is himself well acquainted with growing grain, to continue in the course that has made himself and this part of the State wealthy—in fact, to let "well enough alone." And on the other hand, should grain fail, and fruits succeed, we might then with profit engage largely in fruit culture. I do not by any means wish to discourage judicious tree planting, but on the contrary, hope to see proprietors of small farms, mechanics and laborers, set out sufficient trees to supply their families, and meet the market demand. I have for many years tried to influence this class to set out more trees. Some of them, I am glad to say, take pride in beautifying their homes, and stocking their land with trees for family luxury, but very many of them show a lamentable carelessness in this respect. May not all good citizens speed the time, when every one who possesses a few roods of ground may sit under his own vine and fruit tree, and enjoy unmolested the luxuries of his own hands. F. W. L.—*Greece, N. Y.*

[We agree with our correspondent that it would be unwarrantable, at the present time, for the farmers of Western New York to abandon grain growing and turn their attention exclusively to the culture of fruit, but a great demand exists for the best varieties of long-keeping Apples and Pears, and such sorts may be very generally planted with flattering prospects of producing remunerative results.—ED.]

THOSE who have Lima beans not sufficiently ripened for seed, will find them excellent for the table.

Ladies' Department.

SPRING AND FLOWERS.

"The stormy March is come at last,
With wind, and cloud, and changing skies;
I hear the rushing of the blast
That through the snowy valley flies.

* * * * * *

But in thy sternest form abides
A look of kindly promise yet;
Thou bring'st the hope of those calm skies,
And that soft time of sunny showers,
When the wide bloom on earth that lies,
Seems of a brighter world than ours."

The storms and frosts of another winter are almost at an end. Old winter, with his stern countenance and whitened locks, is retreating before the smiling face of spring. The warm sun and showers of April will soon warm into life the vegetable world. The present is the time to make the necessary arrangements for your garden the coming season. Study the subject a little, and procure the seed you will want to plant, so that when the proper time arrives there may be no confusion or delay. Many, when they see the fine gardens of their neighbors, resolve that another season they too will embellish their homes with flowers, that will signalize it as the abode of taste and refinement; but when the spring arrives, for want of proper forethought and timely preparation, it is allowed to pass unimproved until it is too late. A timely hint will, at this time, be sufficient.

A lady asks information as follows:

MR. EDITOR:—I live on a new place. Our house was only finished last fall; consequently I have nothing but bare ground, which will look barren and unpleasant enough in the spring. Now, I want to make it look as possible next summer, and therefore would like to plant those things that would grow quick, and make a show as soon as possible. Any advice you can give me that will aid me in accomplishing this object, will be of advantage to me; and I have no doubt there are others of your readers similarly situated, that would be thankful for the information I seek. E. L.—*Brantford, C. W.*

It is with pleasure we receive and answer all such communications as the above. Our correspondent must not feel so anxious to have a fine show the coming season, as to neglect planting those things, that, though of but little account in the general appearance the first year planted, so well repay, in after years, for the labor bestowed upon them For a show of flowers the first year, you must depend upon *Annuals*. We have given descriptions of them in previous volumes of the *Farmer*, and in the *Youth's Department* of the present year will be found descriptions of some of the best. The Balsam, Aster, Ten Week Stocks, Phlox Drummondii, Petunia, Portulacca, Convolvulus, Cockscomb, &c., will furnish you a beautiful show of brilliant flowers nearly the whole season, and with little labor. Some other desirable varieties you will also find advertised in our list of seeds recently sent us by L. VILMORIN, of Paris.

Another lady writes us as follows:

"Do, MR. EDITOR, recommend the ladies to plant those most beautiful of all plants the Climbing Roses and Shrubs. The *Ayrshire* and *Prairie Roses* cannot be excelled for beauty, and then there are the *Honeysuckle*, the *Chinese Wistaria*, the *Bignonia*, and many others that should be more generally planted."

Nothing in the vegetable world do we consider more beautiful than the climing and trailing shrubs. We admire and love the beautiful and graceful drapery of nature. How useful, too, in the hands of the gardener, in covering an unsightly fence or outbuilding. Then climing shrubs will make beautiful that which was unsightly and offensvie.

HINTS FOR HOUSEWIVES.

BREAD FROM GROWN WHEAT.—Place the flour in a pan under the stove, or where it may become hot, and keep so for five or six hours, until thoroughly dried through. Knead the dough harder by working in more flour, and bake slower and longer, so as to dry out the moisture, and you will have light dry, white bread. A little alum will improve it, if the wheat was badly sprouted.

The editor of the *American Agriculturist* says he has seen bread made from new grown wheat, according to the above recipe; it was "free from clammy moisture, and of good quality."

SALT IN STARCH.—Our wife informs us that putting salt in starch, while it gives the clothes a good appearance and makes them iron smooth, is destructive of the cloth, and should never be practised. The same piece of linen was divided and used in two families, in one of which salt was added to the starch. In this family the linen failed very soon, while in the other it wore remarkably. Other circumstances confirm the opinion that it was the salt that produced this result. We use a bit of spermaceti, or a piece of lard as large as a small chestnut, in a quart of starch, and consider it a great improvement.—*Homestead.*

RECEIPT FOR JOINING GLASS.—Melt a little isinglass in spirits of wine, and add a small quantity of water. Warm the mixture gently over a moderate fire. When mixed by thoroughly melting, it will form glue perfectly transparent, and will re-unite broken glass so nicely and firmly that the joining will scarcely be perceptible to the most critical eye. Lime mixed with the white of an egg forms a very strong cement for glass, porcelain, &c.; but it must be done neatly, as when hard, the superfluous part can not easily be smoothed down or taken off.

TO CLEAN COMBS AND BRUSHES.—To enough tepid water to cover the bristles, not the top of the brush, add a few drops of the spirits of hartshorn, an ounce of which may be had for sixpence at any apothecary's; dip the brush several times, shaking out the water carefully, and the mixture will act like magic, leaving it clean and pure, needing only to be dried by a towel, no rubbing it needed. Combs may be done in the same way without injury.

JOHNNY CAKE.—1 pint of sour milk, 1 egg, 1 spoonful of molasses, 2 spoonfuls of wheat flour, Indian meal sufficient to make a light batter, 1 teaspoonful of saleratus, dissolved in warm water.

BLACK WEDDING CAKE.—2 lbs. brown sugar, 2 lbs. butter, 2 lbs. flour, 24 eggs, 14 lbs. currants, 6 lbs. raisins stoned and chopped a little, 2 wine glasses brandy, ½ lb. citron, 4 nutmegs, ½ oz. mace, cloves to your taste.

WHITE WEDDING CAKE.—1 lb. flour, 1 lb. pulverized loaf sugar, ½ lb. of butter, 1 lb. of the white of eggs, 3 nutmegs, *oil* of lemon to your taste.

Youth's Department.

GARDENING FOR YOUTH.

ANNUALS CONTINUED.

DIANTHUS CHINENSIS—*Chinese Pink.*—This plant is a native of China, and was carried to Paris by some French missionaries in 1705. In its foliage it closely resembles the common garden Pink, but the flowers are much more beautiful, as their colors are varied and combined in manners so various as almost to exceed belief. It also differs from the common Pink in being annual; it may, however, be preserved two or three years by cutting off the seed-pods as soon as the flowers begin to decay, and never suffering it to ripen seeds. The seeds may be planted in a hot-bed in March, and the plants removed to the open ground in May, or they may be sown in the garden as soon in the spring as the ground is warm.

LUPINUS NANUS.

LUPINUS—*Lupine.*—There are many species of this plant, many of which are very beautiful. The White Lupine was cultivated by the ancient Greeks and Romans, as it now is in Italy and other parts of Europe, as an article of food. In the north of Italy and the south of France, it is grown on poor soils and plowed under as a manure, as clover is with us, and it may yet be found a profitable crop for this purpose in this country. Numerous species of this plant are indigenous to the United States, and some of them, if brought into the garden, would prove worthy of cultivation. The *Lupinus nanus*, or Dwarf Lupine, a cut of which is annexed, is a very pretty dwarf plant, with blue or purple flowers intermingled with a tint of rose color and white. It is a native of California, where it was first procured in 1834. Seeds may be sown during any of the spring months in common garden soil.

PETUNIA PUNCTATA.

PETUNIA.—The Petunia should be found in every good collection of annuals. It is a South American plant, and bears flowers of a great variety of colors, in great profusion and in constant succession until destroyed by the frost. Plants may be propagated either by cuttings or seed.

GOMPHRENA GLOBOSA — *Globe Amaranth.*—No plant can supply the place of this for winter boquets. The flowers, as its name (Amaranthus—without withering,) indicates, will retain their beauty undiminished for years, justly causing it to be styled by poets the everlasting flower, fit emblem of immortality. MILTON, when speaking of angels assembled before the Deity, says:

——"to the ground
With solemn adoration down they cast
Their crowns, in-wove with Amaranth and gold;
Immortal Amaranth, a flower which once
In Paradise, fast by the tree of life,
Began to bloom, but soon for man's offence
To heaven removed, where first it grew, there grows
And flowers aloft, shading the fount of life.
And where the river of bliss, through midst of heaven,
Rolls o'er Elysian flowers her amber stream;
With these that never fade, the spirits elect
Bind their resplendent locks enwreathed with beams;
Now in loose garlands thick thrown off, the bright
Pavement, that like a sea of jasper shone,
Impurpled with celestial roses, smiled."

The Globe Amaranth has been cultivated from a very remote period. There are three varieties, the white, the red, and the orange colored; the last is a new variety, having been introduced into this country about three years since, and is yet quite rare. Beautiful boquets for mantel or parlor ornaments can be made with the cereals—wheat, oats, barley, &c., and the common grasses, with the different colored Amaranths intermingled, which will last a year or two in perfection. To grow good plants, the soil in which the seeds are sown should be made quite rich.

Editor's Table.

NEW YORK STATE AG. SOCIETY.—The Annual Meeting of this Society took place at Albany, February 12—14. There was a good exhibition of fruits, especially of apples; but the show of grains, &c., was not equal to that of last year.

There was considerable discussion in regard to the permanent location of the State Fairs, but nothing was done. The constitution can not be altered, except by a two-thirds vote and a year's previous notice in writing. At the Annual Meeting in 1855, Mr. HALL, of Onondaga, gave notice that at the next meeting he would offer a resolution that the State Fairs be located at "one or more places." The meeting decided that, under the present Constitution, the Fairs always had been, and always would be, held at one or more places, and that therefore it was unnecessary to alter the Constitution in this particular. Mr. CLARK, of Otsego, thought the meeting had "dodged the question," and notices of several motions were given, which will again bring the subject before the Society at the next Annual Meeting.

The committee appointed to nominate officers for the ensuing year, and to name a place for holding the next Fair, reported as follows:

President.

THEODORE S. FAXTON, Utica, Oneida county.

Vice Presidents.

1. JONATHAN THORNE, New York.
2. EDWARD G. FAILE, Westfarms, Westchester county.
3. HERMAN WENDELL, Albany.
4. WILLIAM KNOX, Canajoharie, Montgomery county.
5. ENOCH MARKS, Camillus, Onondaga county.
6. FRANCIS M. ROTCH, Lewisville, Otsego county.
7. D. W. C. VAN SLYCK, Lyons, Wayne county.
8. ALONZO S. UPHAM, Le Roy, Genesee county.

Executive Committee.

HUGH CROCKER, Utica.
C. S. WAINRIGHT, Rhinebeck, Dutchess county.
GEORGE J. J. BARBER, Homer, Cortland county.
ALARIC HUBBELL, Utica.
JAMES BRODIE, Ellisburgh, Jefferson county.

Corresponding Secretary.

BENJAMIN P. JOHNSON, Albany.

Recording Secretary.

ERASTUS CORNING, Jr., Albany.

Treasurer.

BENJAMIN P. KIRTLAND, Albany.

They recommended Utica as the place to hold the next Fair. It was proposed to strike out Utica, and insert Watertown. The question was put to the meeting, and carried. The next Fair, therefore, is to be held at Watertown. The officers were unanimously elected.

On Wednesday evening, Dr. FITCH delivered an interesting and instructive lecture on Entomology. He stated that in Egypt, and other eastern countries, where insects are so terribly destructive, the government employed persons to destroy their eggs. Versailles expends $4,000 per annum for this purpose. It is necessary to understand the habits of the insects, before means can be adopted for their destruction. In regard to the parasite which keeps the wheat midge in check in England, and to which he alluded in his lecture before the Society in 1855, he stated that he had corresponded with entomological societies in England, and that they would endeavor to obtain some of these parasites and forward them to this country. The chintz bug, during the last year, had been very injurious in Illinois, Michigan, Wisconsin, and other western States, destroying not only wheat, but corn, and was more injurious than the wheat midge. Some have set fire to their crops, in order to lessen the number of bugs the coming season. The mildness of the weather in these States favors their propagation. The cut-worm, which severs corn plants, is imperfectly known. It is not the sluggish creature which those who have seen it only in the day-time suppose. In the night they are active, and crawl from one field to another. A single furrow around the field would form a barrier over which few would be able to pass.

The lecture was listened to with great interest.

On Thursday evening, S. W. JOHNSON, Esq., of Yale College, delivered a lecture on Agricultural Chemistry. He thought soil analyses of little or no practical value. We must look to experiments in the laboratory and the field combined, for the development of new principles in agriculture. In Europe, there are a great many "experimental stations," with laboratories attached, which are doing great good. In Saxony alone there are four. We need such here. Our present "model and experimental farms" have not, as yet, made one judicious experiment—one that *could*, by any possibility, demonstrate anything. He alluded to the recent investigations of Mr. LAWES and Prof. WAY, in terms of high commendation, though he thought some of the conclusions drawn from them were not warranted,—it was not *demonstrated* that ammonia was specially beneficial to wheat, and phosphoric acid to turnips. No reason for this opinion was given.

After Mr. JOHNSON'S lecture, the retiring President of the Society delivered the closing address, and introduced the President elect, who briefly addressed the meeting, thanking them for the honor conferred upon him, and promising to do all in his power to promote the interests of the Society.

THE NEW YORK STATE POULTRY SHOW was held in Van Vechten Hall, Albany, Feb. 12—14, and was the best we have ever attended. M. M. KIMMEY, of Cedar Hill, Albany county, exhibited 30 coops. His Silver-penciled Hamburgh fowls were the most beautiful we have seen for some time. He showed a pair of three years old Hong-Kong geese, which weighed 45 lbs.; and a pair of three years old Bremen geese, weighing 42 lbs. By way of contrast, he showed a Bantam hen, four years old, which weighed only ten ounces. His white and grey Dorkings were very fine. THOS. GOULD, of Aurora, Cayuga county, exhibited some beautiful Lop-eared rabbits. Mr. HOWLAND, of Cayuga county, showed some well-marked wild turkies. Game fowls were well represented, as were also the Polands, Black Spanish, Shanghais, &c.

CHINESE YAM.—We trust the communication of Mr. PRINCE, on the *Dioscorea batatas*, will not give our readers the fever. There is no evidence that this plant will prove "a substitute for the potato," or that it will be a valuable addition to the esculents of the country. The price charged for them (one dollar each) is extravagant. Another year it will probably be more reasonable. In proof of this, we would say that they are now selling in Paris at *six cents* each. We received some roots at that price a short time since, and shall be able to speak more decidedly after another season.

PRIZE ESSAY ON GRASSES.—The New York State Ag. Society, at their last annual meeting, awarded a prize of $40 to SANFORD HOWARD, editor of the *Boston Cultivator*, for an essay on Grasses and Herbage.

MASSACHUSETTS HORTICULTURAL SOCIETY.—We are indebted to EBEN WIGHT, Esq., for *Reports of the Committees for* 1855 *of the Massachusetts Horticultural Society.* We give a few extracts:

"*Pears.*—During the past season we have had an exhibition of all varieties of pears grown on quince, equalling in size, fairness of skin, and flavor, the best specimens ever shown in former days. In some instances, the growers attribute the result to a free use of De Burg's superphosphate of lime,—in others, to the liberal use of ground bone. Without a free use of some kind of manure, and good tillage, we should not expect a good return."

The following varieties are said to "have more than sustained their former reputation:"

"Easter Beurre, Beurre Clairgeau, Beurre Sterckman, Doyenne Sterckman, Glout Morceau, Beurre Langlier, and Beurre Superfin."

"*Blackberries.*—During the past season, Blackberries have been shown in abundance, and of superior size. The High-Bush is the variety which has been the most abundant; there were but few of the Lawton. Of this latter we have too little experience to pronounce on its merits; of its fruitfulness there seems to be but one opinion, and should its flavor, size, and solidity for market, prove equal to the High-Bush, it will find a ready sale."

Grapes.—J. FISKE ALLEN says:

"Of hardy grapes, the Isabella and the Diana have been, as heretofore, the favorites. The last named well rewards the careful cultivator for his extra attention in cutting out surplus bunches and all small berries."

C. A. BRACKETT says:

"The Diana, with me, has proved a great grower and free bearer—the bunches of good size, and the berries large, some of them measuring seven-eighths of an inch in diameter. It is a matter of surprise that this, the most delicious of our native grapes, should have received so little attention, while new varieties, greatly inferior to it in point of flavor, have been heralded as the greatest acquisition to our list of hardy vines."

The committee say:

"The Diana has this year proved early, and superior to any former year; and we can recommend this variety, believing it will not fail to give a good crop in any season. Mrs. DIANA CREHORE presented a fine display of extra fine bunches and berries, from the original vine."

Of the Delaware grape it is said:

"The Chairman of your committe has had it growing on the same trellis, during the past season, side by side with the Isabella and several other native vines, and while all others were seriously affected with mildew or blight, the Delaware was entirely free."

"*Strawberries.*—Messrs. HOVEY have exhibited several foreign varieties, for the first time, which, for fruitfulness, &c., give promise of becoming a valuable addition to our already large stock. The Capt. Cook is of a delicious "pine apple" flavor; this and the Bicton Pine, a white variety, proved the most desirable of the several varieties shown."

IRISH AGRICULTURE.—A correspondent of the London *Times*, in commenting upon the progress of Irish agriculture, states that during the past fourteen years the value of farm stock in Ireland has increased from $110,000,000 to $175,000,000, and that the number of horned cattle has risen from 2,000,000 to 3,250,000, while the quality has correspondingly improved. Still, however, of the 20,000,000 of acres which Ireland comprises, only about one-fourth is under direct tillage, and fully one-third in pasture.

GUANO ON CORN.—Mr. RALPH BURROUGHS, of Sergentville, N. J., writes that he had a field of seven acres, half of which he manured with 150 lbs. of guano, and the other half with barn yard manure. The guanoed part was as good as the manured part.

COLD WEATHER AND THE FRUIT TREES.—J. L. GALLOWAY, of Milford, Clermont Co., Ohio, under date of Feb. 20th, writes: "All the Heart and Bigarreau cherries, and almost all kinds of pears, are killed here, by the unusually severe winter. I have lost some three or four thousand trees, worth four or five hundred dollars. Twenty-three degrees below zero was the most severe cold that we experienced here. Peach buds are all killed, but I think most of the trees will survive."

Last winter the thermometer in this vicinity fell to 36° below zero, and though the buds of cherries and pears were somewhat discolored, they survived. We trust such will be the experience of our correspondent.

The *Prairie Farmer*, published at Chicago, under date of Feb. 21st, says:

"There is no longer any doubt in regard to the partial or entire destruction of the current year's growth of many young orchard trees in this part of Northern Illinois. The apple alone seems to have escaped. The pear, when the growth was good, *shows* the effects of the severe weather even more than the peach, in our grounds."

The *Ohio Cultivator* of Feb. 15th says:

"It is now evident that peach trees have suffered considerable injury throughout the Western country, by the severe cold of the past month. Such has always been the case, we believe, when the mercury has reached as low a point as it did on the 9th and 10th ult.—18 to 20 degrees below zero. * * Cherry and pear trees also are much injured, where young and of thrifty growth, especially those removed the past fall. Many persons have expressed the belief that their peach trees are all killed, because on cutting beneath the bark, they find that the wood is badly discolored, looking like mahogany; but I would caution such not to be too hasty in pronouncing them *dead*. Wait a few weeks longer, and during next month examine the bark carefully, and see if it has changed color or appears dead. If on scraping the bark on the larger limbs with the edge of a knife, or cutting it slightly, it appears green and plump, you may presume that the tree will recover, even though the small shoots are all killed, and the wood has become dark colored."

It is the general impression in this vicinity that the peach buds are at present uninjured throughout Western New York.

CHURNING ON A NEW PRINCIPLE.—Mr. EDGAR COXLIN, of Cincinnati, writes us that he has invented a new method of churning. The object of churning being to break the films of casein which encase the globules of butter in cream, he thinks the present process as unwise as it would be to attempt to crack a bushel of walnuts by pounding the heap, instead of one at a time. Instead of beating the whole of the cream at once, with dashers, he proposes to take a small portion of the cream at a time, and, by means of a force-pump, dash it with great force into the body of the cream. He has tried this process, and it works to his entire satisfaction. He has applied for a patent.

D. EDWARDS, writing from Little Genesee, Allegany county, N. Y., Feb. 15., says: "Yesterday was the coldest day ever experienced in this locality. Mercury 30° to 40° below zero, varying in different towns and situations. Snow about two feet deep. No rain since 23d December.

WIND POWER.—A company has been formed which designs to erect and put in operation fifty flouring mills on the Illinois Prairies, next season, propelled by wind power. This will carry mills to the very granaries of the western farmers.

TO OUR CANADIAN FRIENDS.—We shall continue to furnish the FARMER to our Canadian subscribers free of American postage.

G. W. Hunt, of Sublimity, Marion county, Oregon, says: "We can say, in all sincerity, for the benefit of the non-takers of the *Genesee Farmer*, that, embarking as we did in the business of farming when young, the *Genesee Farmer* has been hundreds of dollars advantage to us. At any rate, we commenced poor, and have waxed fat from our farm, and have been a subscriber from the commencement. We are living in a house the plan of which we received from the pages of the *Genesee Farmer*, and although a novelty in the country, it just suits our taste."

It is pleasant thus to be reminded that the quiet and peaceful influence and usefulness of the *Genesee Farmer* is not confined to any particular spot, but extends through our wide-spread country, from the Atlantic to the Pacific.

E. S. Hayward, Esq., of Brighton, will accept our thanks for a barrel of superior *Northern Spy* apples. They had not been touched since they were put in the barrel last fall, and we found them in excellent condition. Mr. H. thinks the practice of assorting apples every few weeks, not only unnecessary, but injurious. Those apples that are bruised in the fall, will rot to a greater or less extent, but sound apples are seldom injured by contact with decaying ones. The more apples are handled, the more likely are they to get bruised, and consequently to decay. Mr. Hayward is one of our most successful and experienced fruit-growers, and his opinion, though contrary to the general impression, is worthy of consideration.

L. G. Morris, Esq., of Mount Fordham, Westchester county, N. Y., wishes us to say that the Catalogue of his stock for 1856 will be out next month. He has none of 1855 left.

Form Clubs.—We send hundreds of copies of the *Genesee Farmer* to Post Offices where only a single copy is taken. We would ask each of these subscribers to consider himself an agent, and form a *club*. Those who have sent 50 cents for a single copy, can have a club of five sent by forwarding $1,50 more, or a club of eight by sending $2,50 more. Those who have sent $2,00 for a club of *five*, can increase it to *eight* by forwarding $1,00 more. Let all examine our club terms and premium list on last page.

To those who form Clubs for 1856.—We do not ask that all the members of a club should receive their papers at one office. We are willing to send to as many Post Offices as there are members of the club, if necessary for the convenience of subscribers. But where it is practicable, Post Masters would accommodate us by keeping a list of the subscribers at their office, and allowing us to send the whole number to their own address. This saves us the trouble of writing on all the papers. Many have done this the present year.

Our friends ordering the *Farmer* will be particular in giving the names of the Post Office, County, and State; also in writing names plain, as by this much perplexity may be avoided to ourselves and subscribers.

Agricultural Books and Libraries.—We refer all to our offer of Agricultural Books. We know of no better way in which a young man could obtain a few good Agricultural Books than by obtaining subscribers to the Genesee Farmer. The fall and winter months afford leisure, and the price of the Farmer is so low and its merits so well appreciated, that few will refuse to subscribe if solicited. We will send specimen numbers and showbills to all who apply.

Bound Volumes.—The volumes of the *Genesee Farmer* from 1847 to the present time, half-bound in sheep, for sale at this office at 62½ cents per volume. In addition to the price of the volume, those who order them to be sent by mail should inclose twenty-five cents for each copy, to prepay postage.

The Rural Annual and Horticultural Directory for 1856.—Copies of this work will be sent by mail free of postage to any one remitting to this office the price of the book—paper cover, 25 cents: cloth, 50 cents.

Notices of New Books, Periodicals, &c.

Journal of the U. S. Ag. Society.

We are indebted to Marshall P. Wilder, Esq., President of the U. S. Agricultural Society, for a volume of its Transactions for 1855. It contains a report of the Annual Meeting of the Society held at Washington, D. C., Feb. 28, 1855, and of the Third Exhibition of the Society held at Boston, Oct. 23–27, 1855. These occupy 201 of the 261 pages of the book. Then we have an article written by the late C. P. Holcomb, of Delaware, being a labored attempt so show that the Reciprocity Treaty, which permits Canadian wheat to come into this country duty free, is a gross injustice to American farmers. Then comes another article in favor of high duties on foreign goods, by John Jones, of Delaware, and which occupies 4 more pages. Then we have 3 pages about a crop of Poland oats—the only practical article in the whole book, and this will be found in the *Transactions of the New York State Ag. Society* for 1854. Then follows 40 pages occupied with a list of the members of the Society. Such is the Journal of the United States Agricultural Society for 1855. Comment is unnecessary.

The Attache in Madrid: or Sketches of the Court of Isabella 2d. Translated from the German. New York: D. Appleton & Co.

This work embodies the most valuable information, written in a charming style, in reference to modern Spain and Spaniards, that we have ever had the pleasure of perusing. The writer saw every thing, from the private levee to the public bull-fight; from the moonlight dance of Manolas to the regal balls of the Duchess d'Alva; from the needle-work of the Spanish maiden to the glorious paintings of Titian, Velasquez, and Murillo; and he has put upon paper all that was worthy of record, which came under his notice. But this is not all; he has given us a kind of political history of modern Spain.

For sale by D. M. Dewey, Rochester.

Rachel Gray. A Tale Founded on Fact. By Julia Kavanagh, author of Nathalie, Madeline, Grace Lee, &c. New York, Appleton & Co. 1856.

The readers of *Grace Lee, Women of Christianity*, and other works of Miss Kavanagh, will anticipate much pleasure from the perusal of Rachel Gray. We venture to say they will not be disappointed. The London *Athenæum*, one of the most fastidious of critics, pronounces it "a charming story," one which "no one can read and not feel a good influence from it." D. M. Dewey, of this city, has it.

The City Architect. A series of Original Designs for Dwellings, Stores, and Public Buildings, adapted to Cities and Villages. Illustrated by drawings of Plans, Elevations, Sections, Details, &c. By William A. Ranlett, author of Cottage Architecture.

This is a valuable work for those for whom it is designed. Published in monthly parts by DeWitt & Davenport, 162 Nassau St., New York, Price 50 cts. per number.

ERNEST LINWOOD. A Novel by Caroline Lee Hentz. Boston: John P. Jewett & Co. 1856.

An exciting and well written story, by an accomplished American authoress, whose death we have just been called to mourn.

NEW MUSIC.—HORACE WATERS, the great Music Publisher and Piano Dealer, 333 Broadway, N. Y., has sent us the following popular piece of music:

"JEANNIE MARSH OF CHERRY VARLEY," Song and Chorus—Words by General MORRIS; Music by THOS. BAKER. Price 25 cts.

JEANNIE (who, by the bye, we understand to be no ideal personage) has excited the poetic muse of Gen. MORRIS, and furnished new inspiration to the most original and melodious of all our ballad composers, THOMAS BAKER, who has produced an admirable melody,—light, sparkling, and graceful as is the fair theme of both poet and musician. This song possesses all the elements of immense popularity, and will soon be found on every piano throughout the country. For the benefit of our fair readers we copy the words of the song, as written by the General:

Jeannie Marsh of Cherry Valley,
At whose call the muses rally;
Of all the nine none so divine
As Jeannie Marsh of Cherry Valley.
She minds me of her native scenes,
Where she was born among the cherries;
Of peaches, plums, and nectarines,
Pears, apricots, and ripe strawberries!
Jeannie Marsh of Cherry Valley.

Jeannie Marsh of Cherry Valley,
In whose name the muses rally;
Of all the nine none so divine
As Jeannie Marsh of Cherry Valley.
A sylvan nymph with queenly grace,
An angel she in every feature;
The sweet expression of the place,
A dimple in the smile of nature!
Jeannie Marsh of Cherry Valley.

Inquiries and Answers.

(JAMES B. CONSER, Strattonville, Pa.) We know of no such work as the "Rise and Progress of Agriculture." You will find an interesting history of agriculture in Loudon's Encyclopedia of Agriculture.

(M. F. MENDENHALL, Jamestown, Guilford Co., N. C.) The address of B. F. IVESON is Columbus, Georgia. The price of his grass *(Ceratochloa breviaristata.)* is $5 per peck. We have seen statements highly commendatory of it, and others from disinterested parties—among whom we may mention FRANK. G. RUFFIN, the editor of the *Southern Planter*, at Richmond, Va.—that are not so favorable.

CULTIVATION OF BARLEY.—MESSRS. EDITORS:—I notice in the last number of the *Genesee Farmer*, an inquiry respecting barley, from H. C. ELY, Richfield, Ohio. Having had some little experience in the culture of barley, I send you my mode of plowing, sowing, &c.

The soil best suited for this grain is of a light, dry nature, but we raise it here on clay subsoil, with success. I sow as early as the ground can be got into a mellow condition after sowing the oats. We sow at the rate of two bushels per acre. If it is late in the spring, a little more should be sown. A light harrow should be used to cover the seed. Twenty-five to thirty bushels per acre is considered, with us, a good crop. If the land is wet, it is better not to sow until it works fine, even if you have to wait till late in the season. Barley is an excellent crop after potatoes, when the land has been well cultivated. DROFANNAH KNOX, *Mt. Healthy, Ohio.*

APPLICATION OF LIME, &c.—I thank you for complying with my request to give me Prof. WAY's views, which are not as definite as I had led myself to suppose they were. One economical question is still unsettled. How *much* lime should be used? I know the views of JOHNSTON, and of STEPHENS, and indeed of most other British authors of note. But I had thought that WAY recommended the use of much smaller quantities than they recommend, coming down to a minimum of five bushels. If this quantity be sufficient, it is obvious that it is much better, whether cheapness or rapidity of improvement is considered, to make an annual application. What think you of it? (1)

One or two more questions I would ask you.

How would you use the plastering of old walls from houses? I have several hundred bushels. I know the chemistry of the subject, but cannot find any recommendation of the quantity to be used. (2)

How do you use the compost from dead animals? I have a pile of it. (3)

I think you have misunderstood me in the matter of agricultural chemistry. The science I admire and believe in. The quackery I am always ready to pelt. For instance, you have lately proved what, strange to say, nobody except BOUSSINGAULT has heretofore disputed, that gypsum, in its ordinary condition of dry powder, will not combine with carbonate of ammonia and decompose into carbonate of lime and sulphate of ammonia. I know it as a practical fact, from trial on a large scale, with twenty-five fattening beef cattle. I also thought it would in some cases expel ammonia, because I had injured an experimental plat of turnips by mixing gypsum with guano. With no more chemistry than a gentleman generally obtains at college and retains scantily amid the varied duties and pursuits of life, I have a very high respect for the results that induction, like yours in the case above, will give us, but no confidence in the dicta of men like LIEBIG, whose genius, (and I think he has a great deal of it,) is occasionally prostituted to fame, or still worse, like JOHNSTON, whose vanity and attachment to theory leads sometimes, I fear, to absolute falsification, whilst his ability makes it rather dangerous to attempt his exposure. But I have no opinion of him since his book on America. "*Falsus in uno, falsus in omnibus.*"

(1) Prof. WAY, in one of his lectures, recommended the application of lime in as small quantities as five bushels per acre, *as an experiment.* "What do we think of it?" We think it is very desirable to make experiments with lime in various quantities, from 5 to 500 bushels per acre; on ordinary soils, we fear 5 bushels would have little or no beneficial effect. So far as our own experience extends, 100 bushels per acre is better than a less quantity, and in many cases 200 bushels is none too much. We found this opinion rather on the experience of practical farmers than on chemical theory. We are well aware that there are many instances recorded where a small quantity of lime has a good effect. C. W. JOHNSON speaking of the application of lime to peaty soils, says: "How excellent such an addition is to these soils, even when applied at the rate of four bushels per acre, has been proved by some extensive experiments of the Scotch planter, the growth of whose young woods has been very materially and rapidly promoted by merely placing a handful of lime under each plant." The *Farmers' Encyclopedia* says: "The quantity of lime applied per acre of necessity varies with the description of the soil; that which contains most organic matter will, of necessity, bear a larger proportion than that which is more free from vegetable or animal remains. The quantity usually appplied is much too large. In Ireland, it is sometimes applied to old pasture lays intended for potatoes, at the rate of 400 bushels per acre, and in some of the moors in Derbyshire, 1500 bushels per acre have been found not too large a quantity. In Scotland the quantity usually applied to light land is 160 bushels per acre; for stiff clay soils, from 240 to 360 bushels. On the stiff clays of the Weal of Kent, the quantity usually employed is about 100 bushels per acre, and that is often repeated every five years on the fallow, before wheat, for

many years." We should be glad of the experience of our readers in the use of lime as a manure.

(2) It may be used in considerable quantity. You need not fear that it will injure the crops, if applied at the rate of 100 or more bushels per acre.

(3) Spread it on to the soil just as it is, and plow it in. Half a ton of animal matter—say a dead horse—would furnish a fair dressing for an acre. We have seen flesh, fish, blood, &c., plowed into the soil in their fresh state with good results. We should prefer, however, to make them into a compost with the soil of old headlands, peat, &c.

HORTICULTURAL.

(J. L., Pendleton, Niagara county, N. Y.) GRAFTING WAX.—There are numerous recipes for making grafting wax. One pint linseed oil, one pound of beeswax, and six pounds of rosin, melted together, make a good grafting wax for use in moderate weather. If too stiff, a little more oil and wax should be added; but the wax must not be made too soft, or it will melt and run in the summer's sun. THOMAS says an excellent grafting wax is made of three parts of rosin, three of beeswax, and two of tallow. The wax may be directly applied when just warm enough to run, by means of a brush; or it may be spread thickly, with a brush, over sheets of muslin, or thin tough paper, which are afterwards, during a cold day, cut up into plasters of convenient size for applying; or the wax, after cold, may be worked up, with wet hands, and drawn into thin strips or ribbons of wax, and wrapped closely around the inserted graft. In all cases success is more certain when the wax is closely pressed, so as to fit closely to every part, and leave no interstices; and it is indispensable that every portion of the wound on the stock and graft be totally excluded from the external air. In cool weather, a lantern chafing dish, or hot brick will be found necessary to soften the plasters before applying them.

(H. A., Berlin, Pa.) DWARF TREES.—Pears are dwarfed by budding or grafting them on the Angers quince. They will not succeed on the common quince. They have been grown on the "common thorn," and on the mountain ash, but these stocks are far inferior to the quince.

"Can apple trees be dwarfed on the common stock?" Severe root pruning dwarfs them to some extent, but the practice cannot be recommended. For "the mode of raising dwarf trees," &c., see Barry's Fruit Book.

(B. SMITH, Watervliet, N. Y.) WEEPING WILLOWS.—Take off cuttings from one to two feet long, and from one to three inches in diameter. They should be of young wood, not over three years' growth. Bury them till the ground is ready for planting. Keep the ground free from weeds, and if several shoots start from the cuttings, remove all but one. Let this be the strongest, and next fall you will have trees five or six feet high.

(WM. CLARKE.) PLANTING PEACH TREES.—On such deep, rich soil, abounding in organic matter, we should fear that peach trees would grow too rank and too late in the fall. It would be well to put a bed of coarse, sandy stones or gravel under each tree. If you have any dry, gravelly or sandy upland, you can raise good peaches. If your soil is very clayey, try peach trees worked on plum stocks.

(JOHN JONES.) PLANTING TREES IN A WHEAT FIELD. We cannot recommend this practice, but if you will or must do it, dig up the wheat for a space of six or eight feet around the tree, and keep it free from weeds by the use of the fork, spade or hoe during summer.

(E. C. S., Orange Co., N. Y.) BUCKTHORN HEDGES.—On the rich soil of the west, the Osage Orange is the most popular, but in the Eastern States the buckthorn is the favorite hedge plant. Prepare the ground by plowing and working it deep and well, and if manure or compost can be plowed in, so much the better. Get plants two years old, and set them in single rows six inches apart, or in double rows a foot apart. You will require about 1,800 plants for 100 rods of hedge.

(J. WILLIAMS.) DWARF PEARS.—Pears on quince stocks do well on deep, dry, loamy soils. A gravelly soil is not so good. The best dwarf pear orchard we know is on a rather heavy, rich loam, thoroughly underdrained. In fact, *with good cultivation*, dwarf pears succeed well on nearly all soils.

(B. KINGSLEY.) MOUNTAIN ASH.—The seed of the mountain ash will not grow the first year. After washing it out, mix it with light earth and lay it in a heap in the ground, covered three or four inches deep. Leave it there for one year and then sow.

TRIMMING DWARF TREES.—Will you or some of your correspondents give through your valuable paper some useful hints respecting trimming and training dwarf pears and apples. Also information about the China or Japan Potato, its success in America, and where seed can be obtained. C. H. CASE—*Bosanquet, C. W.*

We should be glad if some of our experienced correspondents would answer the above inquiries. The seed of the Chinese Potato cannot be obtained in America. The tubers can be obtained from WM. R. PRINCE, Flushing, L. I., and from THORBURN & Co., New York. See our advertising columns.

FRUIT & ORNAMENTAL TREES, SHRUBS, ROSES, &c.,
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THE Subscribers are prepared to receive and execute all orders for Fruit and Ornamental Trees, to be delivered the present Spring.

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Mr. VICK has been connected with the horticultural community for many years as the proprietor and publisher of the *Genesee Farmer* and *Horticulturist*, and for many years past, persons from all parts of the country have urged upon him the necessity of forming arrangements that would meet the wants of the public by attending to the selection of orders, seeing the articles packed and shipped, thus affording a guarantee that the requisite attention would be paid to all orders sent forward. In order to meet their views he has formed a copartnership with Mr. GEO. MARSHALL, who has been connected with the nursery business for the past five years, and he begs to assure the public every attention will be paid in every respect to all who may favor them with their orders.

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1. To every person who sends us a club of eight subscribers at our regular terms, *(three shillings each)* we will give one copy of the *Rural Annual* for his trouble.

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3. To every person sending us TWENTY-FOUR subscribers, as above, two copies of the *Rural Annual*, and one extra copy of the *Farmer*, or, any agricultural work valued at 50 cents, *postage paid*.

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1856.

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JAMES VICK,

November, 1855. *Rochester, New York.*

STEREOTYPED BY J. W. BROWN, ROCHESTER, N. Y.

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